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Occupational Health and Well-being Among Paid Care Workers

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Occupational Health and Well-being Among Paid Care Workers

by

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Dedication

This dissertation is dedicated to past, present, and future care workers everywhere.

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Abstract

Occupational Health and Well-being Among Paid Care Workers

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Work is a meaning laden, but stressful social institution with complex and sometimes contradicting implications for wellbeing. Taking a biopsychosocial approach, this dissertation adapts models of work-related stress typically applied at the individual level to the occupational level and examines how occupational requirements may be appraised differently by workers with different ramifications for their self-reported and underlying wellbeing, even early in the career. Using the care workforce as a case study (e.g., nurses, teachers), it investigates associations between occupational requirements and indicators of early-career wellbeing for a growing, essential, and increasingly diverse segment of the workforce. The aims of this dissertation are to (1) highlight differences in wellbeing between care workers and non-care workers; (2) identify ways that occupational-level requirements shape wellbeing, and (3) show which members of the care workforce shoulder the burdens of this type of work, both prior to and during the COVID-19 pandemic. Results have wide-ranging implications for not only scholars who study work but also for policy makers, care workers themselves, and care-receiving clients. Together, this dissertation helps build a more comprehensive understanding of how worker wellbeing is stratified by occupation in ways that contribute to inequalities in population health.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

Work plays an integral role in adult wellbeing. That role encompasses not only immediate workplace conditions, but also the conditions of broader occupations that transcend any one job. The occupational sector can contribute to worker wellbeing through *occupational requirements*, which specify the occupation-specific tasks, responsibilities, or values that job holders are expected to carry out at work. Some occupational requirements have been linked to worse wellbeing, although others are generally viewed as healthful. Any one occupational sector, however, may encompass both health-promoting and health-harming requirements that are meaningful to workers' lives.

Occupational requirements may influence workers' intentions to remain in or leave their occupations. Although workers leave their occupations at different points for any number of reasons, the early-career workforce—defined as workers between the ages of 25 and 40—is especially likely to experience turnover compared to other age segments of the labor force (Lee, et al. 2017). One potential explanation for these higher rates of turnover is the influence of occupational requirements on early-career workers' wellbeing, both among workers who ultimately leave their professions and those who stay. Further complicating this story is occupational segregation, whereby younger workers may be more concentrated in occupations that are comprised of more harmful occupational requirements. Thus, examining the role of occupational requirements in influencing wellbeing among early-career workers and addressing them is imperative to stemming costly and organizationally detrimental worker turnover.

Care work occupations (e.g., nursing, teaching, social work) are a valuable context for understanding the link between early-career work and wellbeing because they include both healthful and potentially harmful occupational requirements, have relatively young workforces,

and are notorious for having high rates of early-career turnover. Care workers make up a growing portion of the U.S. workforce tasked with providing face-to-face services that enhance others' wellbeing. Although extensive research has focused on individual-level job strain, care work-specific tasks, and the composition of the care workforce, the ways in which these central themes within the work and care work literature interact to shape the wellbeing of early-career care workers is a critical, but missing chapter in the story of American work. Given the important roles care workers play in taking care of the population both prior to and during the COVID-19 pandemic, understanding the unique stressors of care work, how they are distributed among the general and care workforces, and how they are experienced by the people that do this work is of immediate concern for policy makers, employers, and increasingly care-dependent populations. The goal of this dissertation is to examine *whether, how, and for whom* being in a care work occupation is associated with wellbeing.

To accomplish this goal, I apply statistical techniques to nationally representative longitudinal self-reported and biological data of early-career adults from the ongoing Longitudinal Study of Adolescent to Adult Health (Add Health), linked with biannually updated national survey data on occupational requirements from the Occupational Information Network (O*NET). I also conduct semi-structured interviews with people employed in three of the largest care working occupations (i.e., nursing, teaching, social work) to understand how they perceive and experience their occupational requirements, both prior to and during COVID-19. In doing so, this dissertation addresses three key needs: understanding how early-career care work influences wellbeing, recognizing how occupational-level requirements shape wellbeing, and elucidating who among the care workforce shoulders the burdens of this work.

This dissertation builds a larger body of work exploring how occupational requirements relate to wellbeing across different segments of the workforce. Through this dissertation, I not only shed light on care worker wellbeing, but also lay the foundation for exploring how the structure of work shapes early-career worker wellbeing in expected and unexpected ways.

BACKGROUND AND SPECIFIC AIMS

The Nature of Care Work

Care work refers to the face-to-face services provided in the context of interpersonal relationships that help people develop and improve aspects of their lives that they care about (England and Folbre 1999). Care workers span education levels and industries, including health care, personal care and service, education, and community and social service. Duffy (2005) has separated the care workforce into nurturant care workers, who provide direct service, and non-nurturant care workers, who provide behind-the-scenes care. Because direct service provision is central to classic definitions of care work, this dissertation focuses on nurturant care workers. Although there is general consensus on which occupations do and do not fall into the category of nurturant care work (hereafter, care work), this binary categorization tends to obscure the fact that these occupations require different amounts and kinds of care.

To capture the internal heterogeneity among occupations that share the same care work classification, this dissertation focuses on occupational requirements rather than occupations themselves. Although most occupations include some level of care work, care work occupational requirements include paying attention to the needs of others, taking responsibility for meeting those needs, engaging in the hands-on daily tasks of care, and providing services in the context of a relationship (Fisher and Tronto 1990). In short, care work occupations are set apart from

other occupations by a unique mix of compassion, professional responsibility, direct service provision, and sociality.

Occupational Stress and Worker Wellbeing

Occupational stress and resulting worker wellbeing have gained a great deal of attention in the past several decades from researchers, practitioners, and the media. Research on work and occupations has posited numerous models linking *individual workplace conditions* to physical and psychological wellbeing (for a review, see Clougherty, Souza, and Cullen 2010). Far less studied is how *occupation-level requirements*—above and beyond variation in individual workplaces—contribute to stress and worker wellbeing. Studies that do examine the links between occupational requirements, stress, and wellbeing (Alterman et al. 2008; Meyer, Cifuentes, and Warren 2011) often compare all occupations to one another, as opposed to certain *sets* of theoretically linked occupations. Because care work occupations are often regarded as some of the most stressful occupations (Williams 2020), care workers likely suffer from higher levels of occupational stress than workers in other occupations do. This dissertation is one of the first to directly compare the stress-related wellbeing of care workers with that of other workers.

Occupational requirements have physical, psychological, and immunological ramifications that may be recognized or unbeknownst to a worker. Furthermore, the ways in which workers appraise a workplace-specific stressor has been found to attenuate the impact of stressors on *perceived* wellbeing but not necessarily on underlying bodily systems (Griffith, Steptoe, and Cropley 1999). The same might be said of occupational requirements, whereby nurses may see compassion as a satisfying requirement of their work but also recognize the work as emotionally and physically exhausting. Individuals may consciously or subconsciously justify unfavorable occupational requirements by highlighting how much they are satisfied by their field

of work (Mann 2005). Such appraisals do not cancel out harmful aspects of work, but instead mask or justify their risks in the eyes of those doing the work.

Care work is an important example of this phenomenon, whereby occupational requirements are appraised as quite rewarding despite being stressful and hard on the body. On the one hand, recent media has highlighted high levels of stress that accompany these occupations, especially early on in the career (Di Galpin and Whiteford 2018; Walker 2018). On the other hand, care workers often downplay the negative aspects of this work and instead promote the intrinsic aspects of the job (Demirtas 2010; England and Folbre 1999). Thus, despite experiencing many unfavorable occupational requirements, care workers often view their work as satisfying, sentiments that have been linked to wellbeing. An important question is whether care worker perceptions of their wellbeing reflect, deflect, or ignore their physiological health.

The first aim of this dissertation is to examine how care workers *perceive* their wellbeing, and how perceptions may tell a different story than physiological health. In the first dissertation paper (Chapter 2), I assess objective measures of stress-linked physiological health (immunological function) among early-career care workers and non-care workers. The second dissertation paper (Chapter 3) addresses associations between being in care work and self-reported early-career job satisfaction, which taps into perceived job-related wellbeing. The comparison between job satisfaction and immunological function elucidates potential disparities between care workers and non-care workers, as well as whether early-career care workers' self-reported assessments tell a different story than do objectively measured physical indicators closely tied to chronic stress. Such research advances theory by recognizing that workers may appraise their occupational requirements in ways that mask their effects on health and wellbeing.

Occupational Requirements of Care Work and Wellbeing

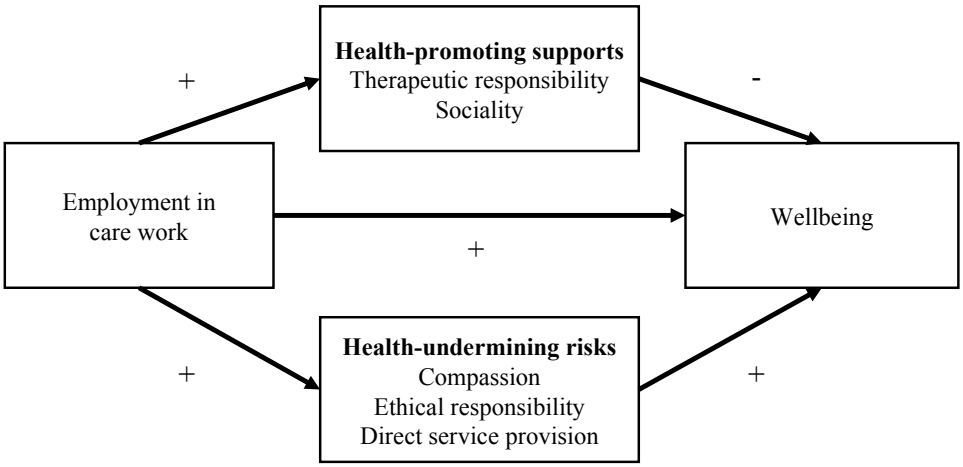
Care work occupations are theoretically set apart from other occupations by a unique mix of compassion, professional responsibility, direct service provision, and sociality. Professional responsibility in this context includes both *therapeutic* responsibility (i.e., helping clients improve aspects of life that they value) and *ethical* responsibility (i.e., making difficult decisions in the best interests of clients) (Stolle 1996). These requirements act both as health-promoting resources and health-undermining risks. The former may offset the latter in some ways but also, past a certain threshold, transition from being salubrious to causing harm. Importantly, the level of health-promoting and health-harming requirements is unevenly distributed among care work occupations. As a result, certain care work occupations likely perform more of the health-enhancing requirements of care work than others.

Health-promoting occupational requirements of care work include therapeutic responsibility and sociality, which provide physiological and psychological benefits that increase as care workers continue to perform them. Care workers often express deep-seated passions for helping others (Bullough and Hall-Kenyon 2012; Emerson 2017). The therapeutic responsibility that care work requires is especially congruent with this worldview. Because care workers are tasked with helping clients, they fulfill the goals associated with their own passions while they work. Such goal fulfillment has been linked to psychological wellbeing (Hall and Chandler 2005). Unsurprisingly, seeing and assisting clients as they improve, heal, and grow is a source of job satisfaction for care workers (Ulrich et al. 2007). Sociality is a similarly important requirement of care work that is also a prerequisite for carrying out therapeutic responsibility. In other words, fulfilling one's therapeutic responsibility is often contingent on maintaining strong relationships and trust with clients (Holland 2015). Managing high-quality relationships with

clients can help care workers better assist them, which translates into health-promoting job satisfaction (Duffy, Oyebode, and Allen 2009). Beyond helping care workers fulfill their other responsibilities, greater sociality is associated with a lower likelihood of chronic conditions later in life compared with less attached counterparts (Umberson and Montez 2010).

Health-undermining occupational requirements of care work include compassion, ethical responsibility, and direct service provision. Compassionate work requires care workers to prioritize clients' needs, often over their own, which can lead to compassion fatigue and undermine health (Slocum-Gori et al. 2013). Similarly, being ethically responsible for the wellbeing of those in their care can be emotionally challenging for care workers (Ulrich et al. 2007). Making ethically challenging decisions—especially those that may go against the wishes of clients and client families—may be stressful and traumatic. Furthermore, care workers serve clients from vulnerable populations and are often privy to their sensitive personal information. Apart from the stress of protecting clients' privacy, care workers also must serve as mandatory reporters of abuse or neglect, which may be beneficent (i.e., "doing good") but not necessarily non-maleficent (e.g., "doing no harm"; Feng et al. 2012). Such imperfect solutions may weigh heavily on care workers and their wellbeing. (Donovan and Regehr 2010). Direct service provision can also be emotionally and physically stressful. Although non-care work occupations may also provide direct services, direct service provision has been described as "an emotional minefield" for care providers (Hunter 2001, p. 441). Specifically, care workers prioritize clients' feelings while also managing and often suppressing their own emotions, which can trigger emotional exhaustion (Hochschild 1983; Näring, Vlerick, and Ven 2012). Care workers also are often subject to direct service tasks that cause strain, including bending, lifting, and managing clients' physical violence against the care worker or her colleagues (Trinkoff et al. 2003).

Figure 1.1. Conceptual model linking employment in care work and wellbeing, mediated by occupational requirements of care work



The second aim of this dissertation is to investigate the *occupation-level mechanisms* linking employment in a care work occupation to self-reported and objective measures of wellbeing. Specifically, this dissertation uses a conceptual model (see Figure 1.1) linking occupational requirements to wellbeing, and examines whether specific occupational requirements of care work explain differences in several indicators of wellbeing (chronic inflammation in Chapter 2 and job satisfaction in Chapter 3) between early-career non-care workers and care workers. This dissertation expands upon quantitative results in Chapter 4 using qualitative interviews to document how three sets of care workers make sense of links between specific occupational requirements and wellbeing uncovered from quantitative analyses.

Occupational, Educational, Sex/Gender, and Racial/Ethnic Variation in Care Work

Care workers can be found in many industries. For example, within the health care industry, endocrinologists, resident nurses, and physical therapy aides are all considered care workers. Although these occupations provide care to clients, there is enormous heterogeneity in the amount, extent, and type of care provided by each. Furthermore, the demographic composition of each care work occupation—especially along the lines of educational attainment,

sex/gender, and race/ethnicity—differs tremendously (Dwyer 2013). Thus, understanding the relationship between care work, health, and wellbeing is largely a story of *who* reaps the benefits or shoulders the burdens of care work.

The third aim of this dissertation assesses who *among* care workers disproportionately suffers or benefits from doing care work. Results from this dissertation specifically demonstrate ways in which occupational stratification by educational attainment, sex/gender, race/ethnicity, and care industry exacerbates or mitigates population health inequalities.

The first dimension of stratification is educational attainment. Pressures to professionalize have had a large impact on the way care work is structured (Dwyer 2013). Care workers with more education triage less desirable tasks to care workers with lesser educational attainment. The result of this process is the relegation of the more health-harming aspects of care to workers with fewer credentials. As such, educational attainment is a potential gradient along which care workers' wellbeing may differ. In Chapter 2, I demonstrate ways in which the inflammatory burden of care work is greatest among the care workers with the least education.

The second dimension of stratification is sex/gender. Care work occupations are largely female-dominated, with well over half of workers across the majority of care work occupations identifying as women (Magnusson 2009). Despite care work occupations being disproportionately made up of women, certain occupations are more female-dominated then others. The unequal distribution of men and women across care work is important because men may be over represented among care work occupations with better overall prospects for wellbeing than are women. Women are also prone to suffer from care overload, whereby they not only care for their clients but also maintain a home and care for children, with slippage in any of these roles seen as personal failure (Blum and Stracuzzi 2004; Hochschild and Machung

2012). Although men may also face emotional strain at work, generally they are not subject to the same "second shift" that society demands from women. Thus, men may benefit from aspects of care work that may be health-harming for women. In Chapter 3, I elucidate a job satisfaction advantage for early-career care working men and women compared to their non-care work counterparts that is explained by ethical responsibility. I also find that men in care work tend to have higher job satisfaction than do women from the same sets of occupational requirements.

A third dimension of stratification is *industry.* Care workers are generally found across the health care, education, and social services industries. Although care workers often overlap in terms of the clients, patients, and students they serve (e.g., hospice social workers in the hospital setting, school nurses, school counselors), each sector has its own goals. For example, health care workers make judgment calls that affect the immediate health and wellbeing of those in their care, and education workers are tasked with creating safe and equitable environments in which children can grow and learn. Social services workers advocate for social and economic justice and provide vulnerable populations with services and resources that promote social welfare. This dissertation, and particularly Chapter 4, pays attention to the goals and contexts of each care industry that may influence care worker health in different ways.

A fourth dimension of stratification is *racial/ethnic diversity.* Dwyer (2013) describes the bifurcation of the U.S. workforce—or the growth in low- and high-wage jobs but the disappearance of middle-wage jobs—as a story of care work and race/ethnicity. Specifically, as more non-Hispanic, white middle class women move into the workforce and out of the home, many move toward higher-wage care work jobs. As this group of women transitions into the workforce, the need for child and elder care increases tremendously. Once the work of homemaking women, care work must now be outsourced to other groups as white, middle class

women enter the workforce. This type of care work is not only more physically demanding but is often low-skilled care work performed by racial/ethnic minorities, and often immigrant women (Duffy 2005, 2007). Recognizing that care work is a polarized segment of the workforce is important to understanding how the burdens of care work are distributed among racial/ethnic segments of the care workforce. Although racial/ethnic diversity is not a focus of this dissertation, I account for racial/ethnic stratification in the health implications of care work by controlling for race/ethnicity in the analyses featured in Chapters 2 and 3.

OVERVIEW OF DATA AND METHODS

This dissertation takes a mixed methods approach to address its aims. It uses data from Waves I, III, and IV of the Longitudinal Study of Adolescent to Adult Health (Add Health) and the Occupational Information Network (O*NET), as well as original interviews with workers in three large care work occupations, namely nursing, teaching, and social work.

Quantitative Data

The first data source, Add Health, is a nationally representative study of U.S. adolescents who were interviewed during the 1994-1995 school year and then followed into their early adult lives. This data source includes demographic characteristics, self-reported health and wellbeing, biomarkers, and occupation. The second data source, O*NET, provides estimates of over 200 occupational requirements for 974 occupations that span the U.S. economy. Estimates can be combined into multi-item inventories and merged into Add Health using Standard Occupational Codes (SOC) that are assigned to each occupation in both data sets.

This dissertation uses two key dependent variables that were measured during Add Health Wave IV data collection: self-reported job satisfaction and physiological wellbeing (high

sensitivity C-reactive protein). The primary independent variable is a dichotomous flag for employment in a care work or non-care work occupation, drawing on existing lists of care work occupations (Duffy 2005). Compassion, ethical responsibility, therapeutic responsibility, sociality, and direct service provision that are measured by the O*NET serve as potential mediators between employment in care work and wellbeing. Moderating variables include sex/gender of Add Health respondents and their highest level of educational attainment. Covariates address differential selection into care work occupations (e.g., race/ethnicity, compassion), workplace-specific confounds (e.g., income, job decision latitude), and prior health. Study-specific variables are discussed at length in subsequent chapters.

All analyses are conducted within a structural equation modeling framework using multiply imputed data, and account for appropriate sampling weights and clustering in Stata 16 (StataCorps 2019) or Mplus (Muthén and Muthén 2017). Study-specific analytical strategies are discussed at length in each chapter of this dissertation.

Qualitative data

This dissertation also includes data from qualitative interviews conducted in Fall 2020 with 41 men and women across three caring occupations—nurses, teachers, and social workers. Each interview took place over Zoom and lasted between 60 and 90 minutes. These interviews included a survey about ethical responsibility on the job and work-related physical and mental health, both prior to and during the COVID-19 pandemic. Participants' responses to these survey questions were used to structure and steer the interview. All interviews were audio recorded, transcribed, and de-identified before being qualitatively coded in NVivo software (QSI International 2021) using both a priori and emergent themes. The sample and analytic approach are described at length in Chapter 4.

SCHOLARLY CONTRIBUTION

In addition to the importance of understanding the wellbeing of the care workforce prior to and during a global pandemic, this dissertation also offers a critical window into understanding how occupational stratification shapes early-career health in expected and unexpected ways. Findings have theoretical and methodological implications that bridge national conversations about work, health, sex/gender, race/ethnicity, and socioeconomic status in an increasingly service-based, care-dependent, pre- and post-COVID-19 economy.

First, this dissertation integrates and operationalizes definitions of care work and its occupational characteristics from the broader care work literature that can be linked to other outcomes of interest for which there are existing data. This dissertation represents one of the first efforts to operationalize and measure care work requirements using national occupational data.

Second, this dissertation develops and tests a theoretical framework for examining the significance of occupation-level requirements, as opposed to individual job-level characteristics, for workers' wellbeing. This framework pushes forth theory on occupational stress by adapting the widely used job demand-control-support model of work-related stress (Johnson and Hall 1988; Karasek 1979) for use at the occupational level, which takes into account factors beyond the immediate workplace that contribute to wellbeing that can be better targeted by policy makers and researchers.

Third, this dissertation demonstrates the feasibility of using occupation-level requirements in addition to individual-level characteristics to study wellbeing in different segments of the workforce. Because individual-level data on work-related requirements are often unavailable in large nationally representative datasets, this dissertation provides a proof of

concept as to whether and how larger, occupation-wide requirements can serve as proxies for individual-level work requirements.

Fourth, this dissertation examines care work at crucial sociodemographic intersections (i.e., sex/gender, educational attainment, early-career stage) to examine which aspects of care work are beneficial and for whom. In doing so, this dissertation bridges multiple academic and national conversations about work, health, immigration, sex/gender, and educational attainment in an increasingly service-based economy serving the most vulnerable Americans, both prior to and during the COVID-19 pandemic.

Chapter 2: Occupational Requirements and Inflammation among Early-Career Care Workers

Work plays an integral role in adult well-being. That role encompasses not only immediate workplace conditions (Johnson and Hall 1988; Karasek 1979), but also the requirements of broader occupations that transcend any one job. For this reason, the occupational sector is a key context of the adult life course. The occupational sector can contribute to worker well-being through occupational requirements, which specify the occupation-specific tasks, responsibilities, or values that job holders are expected to carry out at work. Some occupational requirements have been linked to poor health (e.g., working with hazardous materials), although others are generally viewed as healthful (e.g., connecting socially). Any one occupational sector, however, may encompass both health-promoting requirements and health-harming requirements that are meaningful to workers' lives.

Care-work occupations (e.g., nursing, teaching, social work) are a valuable context for understanding the link between work and health, because they combine generally healthful with potentially harmful occupational requirements (Fisher and Tronto 1990). This sector is also composed of an educationally diverse workforce, making care work an ideal case for examining educational differences in how occupational characteristics are distributed and in who experiences the consequences and benefits of being in this line of work. Perhaps most importantly, care workers make up an ever-growing and increasingly critical portion of the U.S. workforce tasked with providing essential services in the face of and in spite of catastrophic events such as the COVID-19 pandemic. Because these pandemics are likely to become more frequent, understanding how to protect care-worker health will be an important national priority for years to come.

Even prior to COVID-19, care-work occupations were notorious for their high rates of worker burnout and turnover, especially early on in the career; young and often idealistic workers often enter care work but eventually exit this occupational sector (Guarino, Santibañez, and Daley 2006; Starmer, Frintner, and Freed 2016). One reason for this loss of workers may be the unique conditions of care work, which wear on workers and reduce their motivation to continue in the field while undermining health for both those who stay and those who go (Steinhardt et al. 2011). A potentially critical pathway linking care work to worker health (and dropout) is chronic occupational stress, which elevates inflammation. Such inflammation contributes to physical wear and tear and is an early risk factor for a host of chronic diseases later in life. Because stress-induced inflammatory biomarkers begin accumulating long before the onset of disease, inflammation is a valuable indicator for early identification of at-risk populations and potential disruption of stress-related disease pathways.

In this spirit, this study examines the levels of circulating inflammatory biomarkers among care workers in the young adult population. Specifically, it uses data from the National Longitudinal Study of Adolescent to Adult Health (Add Health) and the Occupational Information Network (O*NET) to examine (a) whether early-career employment in care-work occupations is associated with higher levels of inflammation, (b) whether specific care-work occupational requirements drive differences in these markers, and (c) whether educational attainment moderates the association between care work and inflammation. Although the age range of young adult Add Health respondents (ages 24-34 in this study) limits the study's empirical focus to care workers at the beginning of their careers, this focus is theoretically motivated. The young adult stage of the life course is a critical period for understanding worker health because the early-career workforce—defined as workers between the ages of 25 and 40—

is especially likely to experience turnover compared to other age segments of the labor force (Lee, et al. 2017). Furthermore, occupation-related health disparities may be evident early in the career among otherwise healthy adults that increase the odds of chronic disease later in life, and that foreshadow the potential exit of young adults from a care workforce that is needed now more than ever.

BACKGROUND

Triangulating Three Major Social and Public Health Issues

This study explores the links between paid care work, occupational stress, and disease risk factors. All three of these topics are foci of theoretical interest, public concern, and policy attention, and the links between them have implications for not only care workers themselves, but also the vast number of Americans receiving care.

First, care workers make up one of the fastest growing subsets of the workforce. They provide increasingly important face-to-face services in the context of interpersonal relationships that help people develop and improve aspects of their lives (U.S. Bureau of Labor Statistics 2019; England and Folbre 1999). Care workers span education levels and multiple types of occupations, including health care (e.g., phlebotomists, veterinarians), personal care and service (e.g. child care), education (e.g., teachers), and community and social service (e.g., social workers). Duffy (2005) separates the care workforce into nurturant care workers, who provide direct service, and non-nurturant care workers, who provide essential but behind-the-scenes care (e.g., school janitorial staff, hospital cafeteria workers). Because direct service provision is central to definitions of care work, this study focuses on nurturant care workers. Although there is general consensus on which occupations do and do not fall into the category of nurturant care

work (hereafter, care work), this binary categorization tends to obscure the fact that different care workers perform different amounts of care work. For example, pediatricians and pathologists are care workers who differ markedly in the type and amount of care their jobs require from them. To capture this internal heterogeneity among occupations that share the same care work classification, this study focuses on requirements rather than occupations themselves.

Second, occupational stress and resulting worker health have gained a great deal of attention in the past several decades from researchers, practitioners, and the media. Research on work and occupations has posited numerous models linking individual workplace conditions to physiological and psychological well-being (for a review, see Clougherty, Souza, and Cullen 2010). Far less studied is how occupation-level requirements—above and beyond variation in individual workplaces—contribute to stress and worker health. Studies that do examine the links between occupational requirements, stress, and health (Alterman et al. 2008; Meyer, Cifuentes, and Warren 2011) often compare all occupations to one another, as opposed to certain *sets* of theoretically linked occupations. Because care-work occupations are often regarded as some of the most stressful occupations (Williams 2020), care workers as a whole likely suffer from higher levels of occupational stress than workers in other occupations do. This study is one of the first to directly compare the stress-related health of care workers with that of other workers.

Third, disease is often a manifestation of the lifelong accumulation of stress (Tsai et al. 2014), which is why stress is a frequently studied social determinant of later-life health (Schneiderman, Ironson, and Siegel 2005). Most research on this relationship is anchored in self-reported measures of stress and health (e.g., depressive symptomatology, known diagnoses). This study builds on this rich body of research by exploring the underlying physiological processes that shape later health but are less perceptible to workers, such as stress-induced inflammation.

Stressful events trigger acute inflammatory responses that help workers physically cope with immediate stressors and eventually return to baseline. Chronic stress, by contrast, is a state in which stressful conditions occur with some level of regularity, which primes inflammatory levels to remain in an elevated state over time. Such chronic activation and dysregulation of the immune system contributes to the cumulative wear and tear of cardiovascular and metabolic systems that make the body vulnerable to later disease (For a review, see Liu, Wang, and Jiang 2017). In other words, although chronic inflammation is not a disease in itself, it is an early risk factor for later-life health problems (Lee et al. 2011; Libby and Ridker 2004). Since adults spend most of their lives at work, abnormally high inflammation resulting from chronic occupational stress is a likely mechanism through which work shapes health (Clougherty et al. 2010). Because such inflammation may occur early in the career, it is one of the first warning signs of work-related poor health later in life (Almadi, Cathers, and Chow 2013).

For these reasons, early-career care work is an ideal case for studying links between occupational stress, chronic inflammation, and disease. An important first question in such a study is whether care workers and non-care workers do, on average, have different levels of inflammation. As a starting point, I hypothesize that early-career care workers will have higher levels of inflammation than non-care workers. I then conceptualize the occupational requirements that are likely to lead to higher levels of inflammation among care workers.

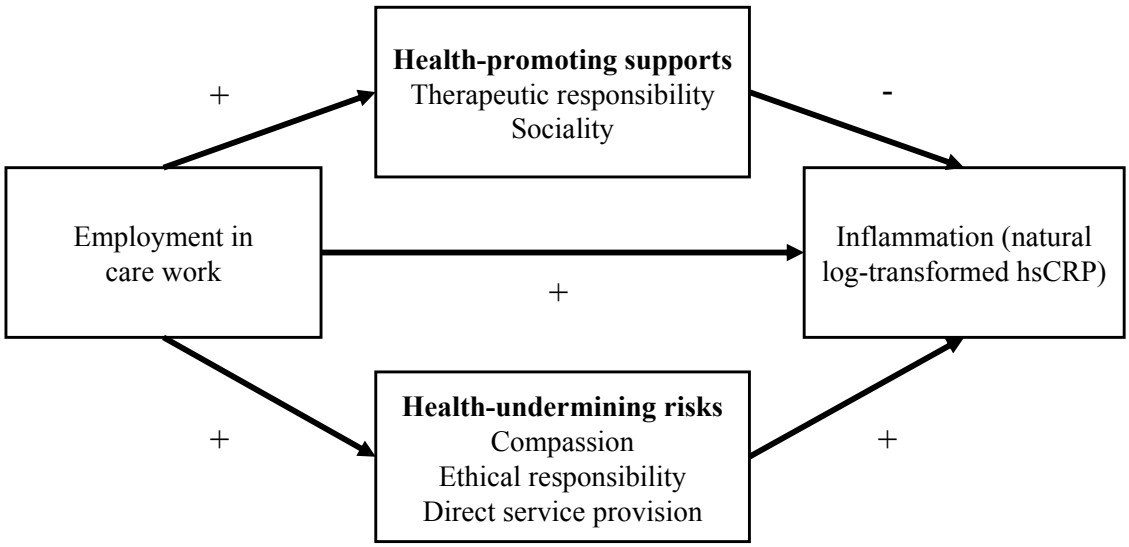
Occupational Requirements of Care Work and Health

Although many occupations include some level of care work, care workers are explicitly tasked with paying attention to the needs of others, taking responsibility for meeting those needs, and engaging in the hands-on daily tasks of care in the context of a relationship (Fisher and Tronto 1990). In short, care-work occupations require compassion, professional responsibility,

direct service provision, and sociality. Professional responsibility in this context includes both *therapeutic* responsibility (i.e., helping clients improve aspects of life that they value) and *ethical* responsibility (i.e., making difficult decisions in the best interests of clients) (Stolle 1996).

These requirements act both as health-promoting resources and health-undermining risks. The former may offset the latter in some ways but also, past a certain threshold, transition from being salubrious to causing harm. Importantly, the level of health-promoting and health-harming requirements is unevenly distributed among care-work occupations that otherwise have the same basic requirements, and this distribution often aligns with educational attainment. As a result, certain care-work occupations likely have better health profiles than others. Below, I describe which requirements of care work are likely to serve as healthful resources and which are likely to entail harmful risks. I then describe how different levels of educational attainment may influence the distribution of supports and risks associated with care work (see Figure 2.1).

Figure 2.1. Conceptual model linking employment in care work and inflammation, mediated by occupational requirements of care work.



Health-promoting occupational requirements of care work include therapeutic responsibility and sociality, which provide physiological and psychological benefits that increase as care workers continue to perform them. Care workers often attribute their occupational choice to a deep-seated passion for helping others (Bullough and Hall-Kenyon 2012; Emerson 2017). The therapeutic responsibility that care work requires is especially congruent with this worldview. Because care workers are explicitly tasked with helping clients (i.e., children, the sick, the elderly), they fulfill the goals associated with their own passions while they work. Such goal fulfillment has been linked to improved mental health, which may help combat the occupational stress associated with less positive work requirements (Hall and Chandler 2005). Care workers may also experience "helper's high": positive affect resulting from providing service to others (Dossey 2018). Unsurprisingly, seeing and assisting clients as they improve, heal, and grow is a source of job satisfaction for care workers (Ulrich et al. 2007).

Sociality is a similarly important requirement of care work that is also a prerequisite for carrying out therapeutic responsibility. In other words, fulfilling one's therapeutic responsibility is often contingent on maintaining strong relationships and trust with clients (Holland 2015). Managing high-quality relationships with clients can help care workers better assist them, which translates into health-promoting job satisfaction (Duffy, Oyebode, and Allen 2009). Beyond helping care workers fulfill their other responsibilities, greater sociality—in terms of both quantity and quality—is associated with a lower likelihood of chronic conditions later in life compared with less attached counterparts (Umberson and Montez 2010).

Because helping others, having passion for one's work, maintaining social relationships, and the job satisfaction that results from these are all associated with better health and stress management (Faragher, Cass, and Cooper 2005; Lavigne, Forest, and Crevier-Braud 2012), I

hypothesize that higher levels of therapeutic responsibility and sociality will reduce (or suppress) the association between care work and inflammation.

Health-undermining occupational requirements of care work include compassion, professional ethical responsibility, and direct service provision. In small amounts, these requirements may promote worker health, but the high level at which care workers are expected to perform them compared with non-care workers may negatively influence their health. Compassionate work requires care workers to prioritize clients' needs, often over their own. It also requires empathy with clients, which can promote compassion satisfaction (Slocum-Gori et al. 2013) but, when excessive, can have adverse consequences. For example, compassion fatigue refers to somatic complaints resulting from work that involves a high degree of client care and vicarious trauma (Ray et al. 2013). Because care workers—especially social workers and counselors—often witness or learn about client trauma, they may internalize these experiences and develop secondary traumatic stress characterized by flashbacks, intrusive thoughts, or nightmares (Thompson, Amatea, and Thompson 2014), all of which undermine health.

Similarly, being ethically responsible for the well-being of those in their care can be emotionally challenging for care workers (Ulrich et al. 2007). For example, an oncologist may regularly face ethical challenges that require her to share difficult news or make life-or-death decisions. Performing ethically challenging tasks—especially those that may go against the wishes of clients and client families—may be stressful and traumatic. Furthermore, care workers serve clients from vulnerable populations and are often privy to their sensitive personal information. Apart from the stress of protecting clients' privacy, care workers must also serve as mandatory reporters of abuse or neglect, which may be beneficent (i.e., "doing good") but not necessarily non-maleficent (e.g., "doing no harm"; Feng et al. 2012). Such imperfect solutions

may weigh heavily on care workers. In promoting the best interests of clients, care workers must continuously weigh their ethical responsibilities with respect to each client's and their own values and beliefs (Donovan and Regehr 2010).

Direct service provision also requires stressful emotional and physical work. Although non-care-work occupations also provide direct services (e.g., banker, chef), direct service provision in care work has been described as "an emotional minefield" for providers and clients alike (Hunter 2001, p. 441). Specifically, care workers must prioritize clients' feelings while also managing and often suppressing their own negative emotions, which can trigger emotional exhaustion (Hochschild 1983; Näring, Vlerick, and Ven 2012). Care workers also are often subject to direct service tasks that cause strain, including bending, lifting, and managing clients' physical violence against the care worker or her colleagues (Trinkoff et al. 2003).

Because occupational stress likely influences inflammation, I hypothesize that occupational requirements for compassion, ethical responsibility, and direct service provision will drive the association between employment in care-work occupations and inflammation.

Educational Attainment as a Buffer against Occupational Stress

Although care workers have similar occupational requirements across levels of educational attainment, the level at which care workers are expected to perform these requirements is unevenly distributed by schooling. For example, teaching aides with less than a college degree often perform fewer health-promoting clerical tasks and more direct personal care (e.g., helping students go to the bathroom), while teachers, who generally hold at least a bachelor's degree, instruct and perform more of the healthful, therapeutic responsibilities that characterize care work (Giangreco et al. 2005). The concentration of the healthful aspects of care work among the most educated care workers is likely the result of continued efforts by powerful

professional associations (e.g., National Education Association) to consolidate authority, provide accreditation, and divide tasks within hierarchical occupational structures in ways that promote and protect members' interests (Starr 1982). At the same time, in addition to the financial benefits that educational credentials confer, the process of attaining more education involves the cultivation of social and personal resources (e.g., sense of control, large networks, access to institutional supports) that promote healthier lifestyles and protect people from stressors (Mirowsky and Ross 2003). In other words, educational attainment might not only select care workers into healthier occupational experiences, but also enable them to maintain better health, even when they do not have healthier occupational experiences.

For these reasons, care workers with more education are less likely to be exposed to unhealthful aspects of care work or to be affected by such exposure. I hypothesize, therefore, that educational attainment will moderate the association between employment in care work and inflammation, with more educated care workers having better health than the less educated.

DATA AND METHODS

The first data source, Add Health, is a nationally representative study of U.S. adolescents who were interviewed during the 1994-1995 school year (Wave I) and then followed into their adult lives to Wave IV, when they were between the ages of 24 and 34. Data from Wave I provide information on demographic characteristics, data from Wave III allow measurement of the baseline level of general health most proximal to but preceding work histories, and data from Wave IV include biomarkers. Add Health is, thus, an ideal data set for examining, by occupation, health and inflammation within the same person at the critical early-career stage.

The second data source, O*NET, is maintained by the U.S. Department of Labor as a primary source of occupational information. Based on the Standard Occupational Classification (SOC), O*NET includes biannually updated information on 974 occupations that span the U.S. economy. The O*NET provides estimates of over 200 occupational characteristics (e.g., knowledge, skills, abilities needed for each occupation) that can be used as variables in their own right or combined into multi-item inventories (Crouter et al. 2006). To obtain these measures, O*NET selects a random subset of workers within the targeted occupation (sampled from businesses and professional or trade organizations) to complete a standardized questionnaire on occupational characteristics. Sample respondents have a 64-74% response rate (U.S. Department of Labor 2018). This data is then cleaned, weighted, and pooled by O*NET staff to produce a set of final estimates that properly account for the combined effects of clustering, stratification, and unequal weighting. Each variable estimate is based on responses from 15 or more respondents, which ensures that mean values for all Likert type variables have 95% confidence intervals of less than plus or minus 1.10 for all occupations (Peterson et al. 2001).

Some studies have used occupational codes to merge occupation-level data from the O*NET with large, nationally representative data sets such as the National Health Interview Survey (NHIS) and the National Health and Nutrition Examination Survey (NHANES) (Alterman et al. 2008). Similarly, O*NET data may be merged into Add Health using SOC codes, which are six-digit codes assigned to each occupation in both data sets. Because SOC codes change over time as occupations are added or removed, the current study merged archived O*NET data from 2008 (O*NET Version 13.0) into the Add Health Wave IV data to correspond with the calendar years in which the Add Health data were collected.

The analytic sample (n = 5,220) is restricted to Add Health respondents in the civilian labor force who worked for at least ten hours a week and had a measure of underlying inflammation (hsCRP, discussed below) at Wave IV. Table 2.1 presents descriptive characteristics of the full sample and of care workers and non-care workers within the sample.

Table 2.1. Unweighted descriptive statistics for the analytical sample.

	Full sample (n = 5,220)		Care workers (n = 1080)		Non-care workers (n = 4140)	
	M or %	(*SD*)	*M* or %	(*SD*)	*M* or %	(*SD*)
Employed in care work	21		100		0	
Occupational requirements (range = 1-5)						
Therapeutic responsibility	3.02	(0.49)	3.53	(0.41)	2.89	(0.42)
Sociality	3.88	(0.38)	4.21	(0.28)	3.79	(0.35)
Compassion	3.71	(0.40)	4.10	(0.27)	3.60	(0.36)
Ethical responsibility	3.39	(0.49)	3.61	(0.39)	3.34	(0.50)
Direct service provision	3.81	(0.46)	4.04	(0.27)	3.75	(0.48)
Abnormally high hsCRP (hsCRP > 3 mg/L)	39		45		37	
Natural log-transformed hsCRP	0.69	(1.34)	0.85	(1.42)	0.65	(1.32)
Sociodemographic circumstances						
Educational attainment						
High school degree or less	20		8		23	
Some college	46		40		48	
College	21		23		20	
Beyond college	13		28		9	
Female	51		81		44	
Racial/ethnic minority						
Non-Hispanic White	56		56		56	
Non-Hispanic Black	19		21		18	
Hispanic	15		13		15	
Non-Hispanic Asian	6		6		6	
Other/Multiracial	5		4		5	
Marital Status at Wave IV						
Married	32		41		30	
Cohabitated	41		35		42	
Dating	19		16		20	
Single	8		8		8	
In same occupation as at Wave III	1		1		1	
Occupational prestige (range = 1-10)	5.11	(1.63)	5.36	(1.56)	5.04	(1.64)
Fasting time (in hours)	4.72	(4.66)	4.37	(4.42)	4.81	(4.71)
Number of current infections (range = 0-3)	0.45	(0.67)	0.47	(0.68)	0.44	(0.66)

Table 2.1 continued on next page.

Table 2.1 (cont.)

	Full sample (n = 5,220)		Care workers (n = 1080)		Non-care workers (n = 4140)	
	M or %	(*SD*)	*M* or %	(*SD*)	*M* or %	(*SD*)
Compassionate personality (Range 1-7)	5.79	(1.25)	6.08	(1.08)	5.71	(1.28)
Job physicality						
Seated work	40		16		46	
Standing, light physical work	24		43		19	
Standing, moderate physical work	23		37		19	
Hard physical work	13		5		15	
Hours worked per week						
10-19	3		5		3	
20-29	6		7		6	
30-39	14		23		12	
40-49	54		48		56	
50-59	14		10		15	
60-69	5		3		5	
70+	3		3		3	
Frequency of repetitive tasks on the job						
None/almost none of the time	7		8		6	
Some of the time	31		31		31	
Most of the time	34		36		33	
All/almost all of the time	28		25		29	
Job decision-making						
None/almost none of the time	5		3		6	
Some of the time	24		22		24	
Most of the time	37		44		35	
All/almost all of the time	34		31		35	
Income at Wave IV (in thousands)	39.17	(44.29)	33.65	(30.16)	40.61	(47.19)
Self-reported poor or fair health at Wave III	4		4		4	

Measurement

Employment in care-work occupations. I dichotomized Add Health respondents as employed in care-work or non-care-work occupations. To categorize occupations as care work, I drew on existing lists derived by Duffy (2005), who used prior conceptions of care work and criteria from the *Index of Industries and Occupations* and *Dictionary of Occupational Titles* to compile a list of nurturant care occupations and their Census codes. I adapted these lists to include Add Health and O*NET SOC coded occupations that correspond to similar Census codes. For a list of care-work occupations in this study, see Appendix A. Around 21 percent of

the sample was employed in care work, mirroring the proportion of care workers in the general U.S. workforce.

Specific occupational requirements of care work. Using definitions of care work from the literature (England and Folbre 1999, Fisher and Tronto 1990), I conceptualized five occupational requirements associated with care work: therapeutic responsibility, sociality, compassion, ethical responsibility, and direct service provision. To operationalize each, I pulled occupation-level items from the O*NET that most closely mirrored these requirements. All were measured on a scale from 1 to 5, with 5 indicating how important each was to the worker's performance of her current job. Descriptive statistics for all included occupation-level items can be found in Appendix B. I then examined the extent to which O*NET items loaded onto each occupational requirement. For each occupational requirement, all items demonstrated good average inter-item reliability (Cronbach's alpha ranged from 0.79 to 0.86). See Table 2.2 for the O*NET (Version 13.0) items corresponding to each occupational requirement and associated Cronbach's alpha levels, and see Appendix C for pairwise correlations between items corresponding to each occupational requirement.

I created five indices representing the level of therapeutic responsibility, sociality, compassion, ethical responsibility, and direct service provision required by each occupation: for each occupation, I averaged the items that corresponded to each occupational requirement (e.g., averaged the scores for active listening, social perceptiveness, concern for others, and service orientation to create a "compassion" score). Higher indices indicated greater importance of each requirement for the occupation. As Table 2.1 shows, mean scores for care workers exceeded those for non-care workers in all domains.

Table 2.2. O*NET (Version 13.0) occupational requirements comprising care work.

Requirement	Definition	O*NET items	α
Therapeutic responsibility	Commitment to helping clients improve aspects of life that they value	Assisting and caring for others	0.81
		Instructing	
		Coaching and developing others	
		Teaching and training others	
		Providing consultation or advice to others	
Sociality	Providing services in the context of a relationship	Social orientation	0.79
		Establishing/maintaining interpersonal relationships	
		Cooperation	
Compassion	Paying attention to the needs of others	Active listening	0.85
		Social perceptiveness	
		Concern for others	
		Service orientation	
Ethical responsibility	Commitment to making difficult decisions in the best interest of their clients	Judgment and decision-making	0.84
		Making decisions and solving problems	
		Evaluating information to determine compliance with standards	
		Interpreting the meaning of information for others	
		Documenting/recording information	
Direct service provision	Engaging in the hands-on daily tasks of care	Performing for or working directly with the public	0.86
		Contact with others	
		Self-control	
		Stress tolerance	
		Dealing with external customers	
		Dealing with unpleasant or angry people	

Underlying inflammation. During Wave IV, Add Health researchers collected inflammatory biomarker data from respondents in the form of blood spots. Specifically, researchers assessed respondents' levels of high-sensitivity C-reactive protein (hsCRP). Prior research has found elevated baseline levels of hsCRP to be associated with morbidity and

mortality (Jylhä, Volpato, and Guralnik 2006; Ridker 2007), specifically related to chronic psychosocial stressors such as work (Johnson, Abbasi, and Master 2013). Although hsCRP is associated with worse health later in life, elevated hsCRP may be evident in young adulthood, regardless of whether it directly manifests in disease morbidity (Shanahan et al. 2014). Within the analytic sample, 45 percent of care workers and 37 percent of non-care workers had hsCRP levels that exceeded normal ranges (hsCRP >= 3 mg/L), with cut-offs coming from Add Health documentation (Whitsel et al. 2013). Following prior conventions, all analyses used a natural log-transformed measure of hsCRP to account for the right-skewness of hsCRP values (Goosby, Cheadle, and McDade 2016). Within the sample, care workers' natural log-transformed hsCRP was higher than that of non-care workers ($M_{\text{Care workers}}$ =0.85 , $SD_{\text{Care workers}}$ = 1.42; $M_{\text{Non-care workers}}$ =.65 , $SD_{\text{Non-care workers}}$ = 1.32).

Educational attainment. Wave IV respondents reported their educational attainment, which was categorized as having a high school degree or less, some college, a bachelor's degree, or beyond a bachelor's degree. Care workers were significantly more likely than non-care workers to have education beyond a bachelor's degree and less likely to have some college or less (28 percent compared with 9 percent and 48 percent compared with 71 percent, respectively). A comparable proportion of care workers and non-care workers held a terminal bachelor's degree.

Sociodemographic circumstances. The first set of covariates included factors associated with selecting into care-work occupations, including being a woman, being a racial/ethnic minority, and having a lower income (Duffy 2005; England and Folbre 1999). The former two came from self-reports from Add Health respondents at Wave I, while the latter two were from Wave IV self-reports. Also included was a self-reported measure from Wave III of how true this

statement was: “I am compassionate.” This factor addressed caring personalities as a potential source of selection into care-work occupations (Antecol and Cobb-Clark 2013). This study also controlled for marital status at Wave IV, occupational prestige, and whether the respondent at Wave IV was in the same occupation as at Wave III. Only 1 percent of respondents were in the same occupation at Waves III and IV, which reflects the age of the sample. Another set of covariates included job-related confounds related to individual workplaces as opposed to occupational requirements, including respondents’ appraisals of job demand (number of hours worked per week) and job control (decision latitude and repetitiveness of job tasks) at Wave IV. The final set of covariates included health-related confounds. Specifically, a prior measure of self-reported poor or fair health from Wave III was included in models to account for past health unrelated to occupation, and the number of current infections and fast time before biomarker collection (McDade et al. 2014) were included as covariates because of the sensitivity of hsCRP to the body’s infection-fighting inflammatory response. Since inflammation was not measured in Wave III, analyses did not control for inflammation prior to workforce entry. See Table 2.1 for descriptive information about care workers and non-care workers on all covariates.

Plan of Analyses

All descriptive statistics were calculated in Stata (StataCorp 15). Path analyses using structural equation modeling (SEM) were conducted in Mplus version 8.4 (Muthén and Muthén 2019) to examine hypothesized associations. To test the first hypothesis, the baseline model regressed natural log-transformed hsCRP on a dichotomous measure of being employed in a care-work occupation and a full set of covariates, including respondents’ educational attainment. For the second and third hypotheses, I conducted path analyses to investigate mediation between care-work employment and inflammation by the five occupational requirements. I entered each

of the five occupational requirements into separate models. I then regressed natural log-transformed hsCRP on each occupational requirement and employment in care work, as well as each occupational requirement on employment in care work. Mplus's INDIRECT procedure assessed whether each occupational characteristic indirectly linked care-work employment with inflammation and provided estimates of total, direct, and indirect effects. For the fourth hypothesis, I added to the baseline model a series of dummy-coded interaction terms between the educational categories and a dichotomous variable for employment in care work.

I adjusted models using appropriate Add Health sample weights (GSWGT4_2), strata (region), and clustering (psuscid) through Mplus's COMPLEX procedure. Item-level missing data were recovered using full information maximum likelihood estimation (FIML), which estimated the likelihood function for each individual based on the available information so that all 5,220 cases were included in every model (Allison 2001). Estimates include bootstrapped (bootstrap = 1000) standard errors.

Because all hypotheses were directional, I used one-tailed hypothesis tests. I base conclusions regarding statistical significance on an alpha value of .05. The results section reports unstandardized coefficients (*b*), bootstrapped standard errors (*b SE*), standardized coefficients (β), and p values (*p*) for the baseline model and interaction models. For all mediation models, I report standardized coefficients (β), bootstrapped standard errors (β *SE*), and p values (*p*) in the text. To better visualize main and interaction effects between being in care work and educational attainment, Figure 2.2 features predicted mean values of natural log-transformed hsCRP for care workers and non-care workers at all levels of educational attainment.

As a sensitivity analysis, I used the Impact Threshold for Confounding Variables (ITCV) as a post-hoc robustness index to help gauge the level of causal inference for the first hypothesis,

specifically how powerful any confounding variables would need to be to negate the inference for the association between being in care work and hsCRP. The ITCV equation is as follows:

$$R_{x,y} - r^{\#}_{x,y} / (1 - r^{\#}_{x,y})$$

$$r^{\#}_{x,y} = t/\sqrt{[(n - q - 1) + t^2]}$$

where t is the critical t-value, n is the sample size, and q is the number of model parameters. The resulting value indicated the minimum product of correlation between predictor and confounding variable as well as the correlation between the outcome and the confounding variable ($r^{\#}_{x,cv}$ x $r^{\#}_{y,cv}$) needed to reduce the focal association to non-significance (Frank 2000). Although this process did not establish causality, it improved confidence in causal inferences.

RESULTS

Employment in Care Work and Underlying Inflammation

Employment in a care-work occupation was associated with around a 13 percent increase (i.e., 100 * $e^{0.12}$ = 12.75) in hsCRP after controlling for the full set of covariates, including educational attainment (b = 0.12, b *SE* = 0.06, β = 0.04, p < .05, See Table 2.3, Model 1). These results support the first hypothesis that being in a care-work occupation would be associated with worse underlying health compared with being in a non-care work occupation, irrespective of educational attainment.

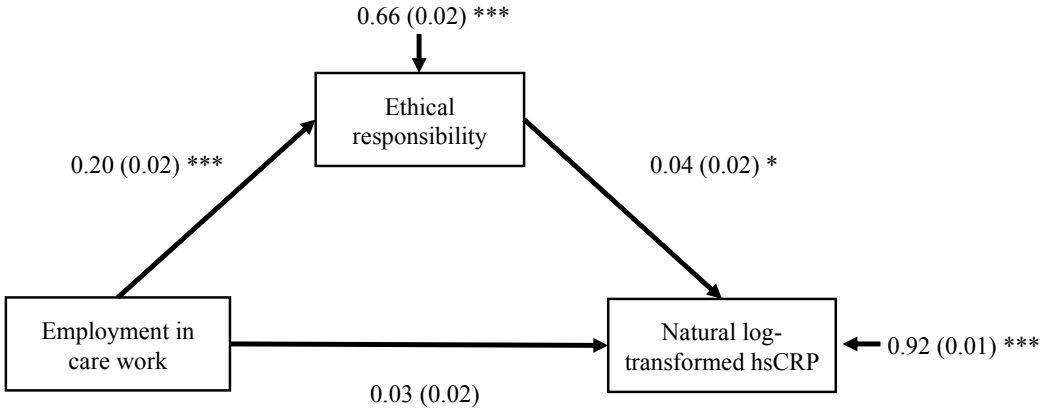
ITCV calculations boosted confidence in these results. The minimum impact to invalidate an inference for a null hypothesis of zero effect was 0.003, which is based on a correlation of 0.057 with the outcome, a correlation of 0.057 with the predictor of interest (conditioning on observed covariates), and a threshold of 0.023 for statistical significance (alpha = .05). In other words, the impact of an omitted variable must be 0.057 X 0.057 = 0.003 to invalidate an

inference for a null hypothesis of zero effect (Frank 2000). The impact of seven covariates—being a woman, educational attainment, number of hours worked per week, self-reported compassionate personality, job physicality, income, and occupational prestige—reached this threshold (see Appendix D). To invalidate this inference, a confounding variable would have to be similarly correlated with *both* being in care work and natural log-transformed hsCRP. Together, these results warranted examining whether the occupational characteristics of care work accounted for the association between employment in care work and natural log-transformed hsCRP.

Occupational Requirements as Health-promoting Supports or Health-undermining Risks

The second set of hypotheses predicted that higher levels of therapeutic responsibility and sociality would serve as health-promoting supports, which reduce the association between care work and inflammation. Of these two requirements, only the inclusion of therapeutic responsibility in the model reduced to non-significance the direct effect between care work and hsCRP found in the baseline model. Neither therapeutic responsibility nor sociality, however, significantly mediated the association between the focal independent variable and the dependent variable. These results ran counter to expectations. Notably, occupationally required therapeutic responsibility and sociality were associated with employment in care work ($\beta = 0.48$, β *SE* = 0.02, $p < .001$ and $\beta = 0.35$, β *SE* = 0.02, $p < .001$, respectively), but neither significantly predicted levels of inflammation.

Figure 2.2. Mediation models for ethical responsibility with standardized coefficients



Note. n = 5,220. Models controlled for number of current infections; fasting time; occupational prestige; sex/gender; race/ethnicity; marital status; previous occupation at Wave III; self-rated compassionate personality; job physicality, weekly hours, repetitiveness, and decision latitude; yearly income; and health status at Wave III. Significance levels are based on one-tailed tests. * $p < .05$, ** $p < .01$, *** $p < .001$

The third set of hypotheses predicted that higher levels of occupationally required compassion, ethical responsibility, and direct service provision would be associated with inflammation and mediate associations between care work and natural log-transformed hsCRP. Of these three occupational requirements, only ethical responsibility predicted underlying inflammation on its own (β = 0.04, β *SE* = 0.02, $p < .05$) after including covariates. Furthermore, the total effect of employment in care work on inflammation was partially mediated by ethical responsibility (total effect = 0.04, β *SE* = 0.02, $p < .05$; indirect effect = 0.01, β *SE* = 0.01, $p < .05$). Although occupationally required compassion and direct service provision were associated with employment in care work (β = 0.41, β *SE* = 0.02, $p < .001$ and β = 0.20, β *SE* = 0.02, $p < .001$, respectively), neither significantly predicted levels of inflammation. Together, these results identified ethical responsibility as the sole factor among observed occupational requirements that accounted for differences, albeit small, in inflammation between care workers and non-care

workers. In other words, the evidence suggests that ethical responsibility is an occupationally required but potentially health-harming risk for care workers.

Educational Attainment as a Moderating Health-promoting Resource

The last hypothesis was that educational attainment would moderate associations between care work and inflammation. Employment in care work remained significantly associated with the focal outcome (b = 0.46, b *SE* = 0.19, β = 0.14, $p < .01$; See Table 2.3).

Unsurprisingly, greater educational attainment tended to be associated with lower natural log-transformed hsCRP compared with those with a high school degree or less ($b_{\text{SomeCollege}}$ = -0.14, b *SE* = 0.07, β = -0.05, $p < .05$; $b_{\text{CompletedCollege}}$ = -0.37, b *SE* = 0.09, β = -0.11, $p < .001$, $b_{\text{BeyondCollege}}$ = -0.26, b *SE* = 0.12, β = -0.06, $p < .05$). Having a bachelor's degree or more significantly predicted the outcome in interaction with the care-work variable ($b_{\text{CompletedCollege x CareWork}}$ = -0.41, b *SE* = 0.24, β = -0.06, $p < .05$, $b_{\text{BeyondCollege x CareWork}}$ = -0.48, b *SE* = 0.23, β = -0.08, $p < .05$).

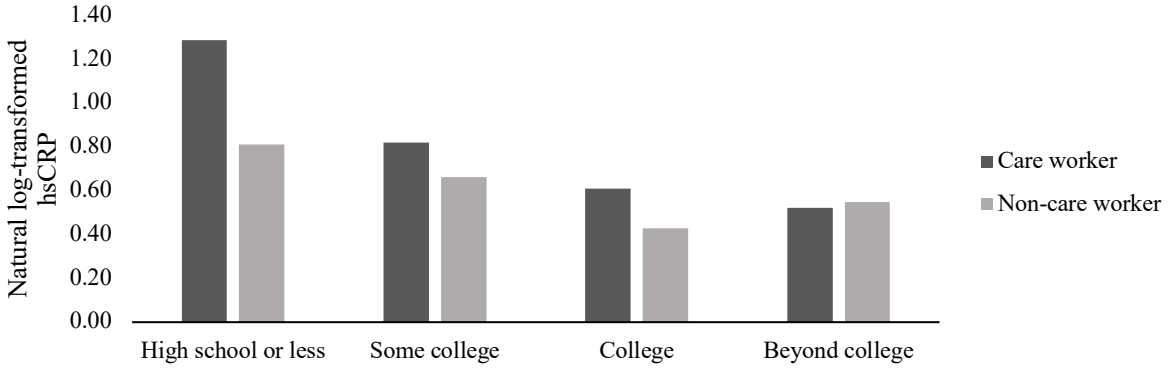
Table 2.3. Unstandardized and standardized results from linear regression models predicting natural log transformed hsCRP, including interactions between educational attainment and employment in care work.

	Model 1				Model 2			
	b	*SE b*	B	*p*	*b*	*SE b*	β	*p*
Employed in care work	0.12	0.06	0.04	*	0.46	0.19	0.14	**
Educational attainment								
Some college	-0.16	0.06	-0.06	***	-0.14	0.07	-0.05	*
Completed college	-0.41	0.08	-0.12	***	-0.37	0.09	-0.11	***
Beyond college	-0.36	0.10	-0.09	***	-0.26	0.12	-0.06	*
Ref. High school or less								
Interactions								
Employed in care work x Some college					-0.31	0.20	-0.07	
Employed in care work x Completed college					-0.41	0.24	-0.06	*
Employed in care work x Beyond college					-0.48	0.23	-0.08	*
Ref. Employed in care work x High school or less								
Constant	0.68	0.22	0.51	***	0.64	0.23	0.48	**

Note. n = 5,220. Models controlled for number of current infections; fasting time; occupational prestige; sex/gender; race/ethnicity; marital status; previous occupation at Wave III; self-rated compassionate personality; job physicality, weekly hours, repetitiveness, and decision latitude; yearly income; and health status at Wave III. Significance levels are based on one-tailed tests. * $p < .05$, ** $p < .01$, *** $p < .001$

Predicted means of natural log-transformed hsCRP for each level of educational attainment (see Figure 2.3) suggest that the associations between being in a care-work occupation and health declined with educational attainment, with most of the deleterious health outcomes concentrated among care workers with a terminal high school degree or less. Specifically, the gap between care workers and non-care workers was over a third of a standard deviation among the high-school educated and over a tenth of a standard deviation among those with some college or a college degree.

Figure 2.3. Predicted means of natural log-transformed hsCRP for care workers and non-care workers by educational attainment.



Note. $M_{\text{natural log-transformed hsCRP}} = 0.69$, $SD_{\text{natural log-transformed hsCRP}} = 1.34$

DISCUSSION

This study investigated the association between being in a care work occupation and inflammation among early-career workers, whether the occupational requirements of care work drove or suppressed this association, and whether education moderated the association between being a care worker and inflammation. According to the results, early-career care workers do suffer from higher levels of inflammation, which suggests that care work is stressful for care workers in general, even though each care work occupation requires workers to perform different

levels of each of their shared occupational requirements. Most of this disadvantage seems to be experienced by the least educated care workers. Of the various occupational requirements studied here, only ethical responsibility significantly mediated the association between being in care work and inflammation and independently predicted the outcome. This finding suggests that ethical responsibility is a source of occupational stress that influences care workers' health and can put them at risk of later life disease. These results bring up five themes for discussion, each of which takes on added weight when considered in the context of the COVID-19 pandemic.

The first theme concerns the importance of ethical responsibility in care work. This occupational requirement includes the onus of weighing the occupationally and legally prescribed courses of action and the client's best interests before making major decisions. This aspect of care work is not trivial, in large part because care clients are often from vulnerable populations (e.g., children, the sick, the elderly). Ethical responsibilities that may emerge when working with these groups include doctors deciding when to discontinue treatment for dying patients and teachers deciding whether to call Child Protective Services when they suspect that students are victims of abuse. Care workers not only are subject to vicarious traumas, but also must make difficult decisions to try to alleviate client traumas. The literature refers to the process of internalizing client trauma as compassion fatigue (Ray et al. 2013). This study suggests a more fine-tuned analysis of this process: it is not necessarily expressing compassion that exhausts the body, but rather bearing the responsibility for making difficult decisions in the sometimes competing contexts of professional requirements and the care worker-client relationship (Dzeng and Wachter 2020). Because care workers often report experiencing ethical dilemmas on a regular basis (Davies and Heyward 2019; Rathert, May, and Chung 2016), ethical responsibility is a particularly important occupational requirement with far-reaching

consequences not only for care worker health, but also for understanding why care work has such high turnover rates. Furthermore, because care workers—especially those providing health care—are facing higher client loads and more limited resources during the current COVID-19 pandemic, care workers may more often find themselves in ethically charged situations, which will further exacerbate occupational stress-linked inflammation.

The second theme concerns the utility of understanding and measuring care work on a spectrum. Most conceptions of care work divide occupations into care-work and non-care-work occupations. Duffy (2005) further separates care-work occupations into those that provide nurturant or non-nurturant care. These categorizations of care work do not address the level nor the type of care that each occupation requires and, therefore, do not allow for more nuanced understandings of who provides care and who does not. Furthermore, such categorizations do not address the fact that occupations that are not conventionally considered care work may actually provide a great deal of this type of work. For example, lawyers provide direct service, have interpersonal relationships with clients, help clients improve an aspect of their lives that they value, show compassion for their clients, and have the ethical responsibility of protecting their clients within the context of the law (Bartlett and Aitken 2009). Within the care-work literature, however, lawyers are not considered care workers. Although there is utility in grouping together workers that perform a similar type of work, this process runs the risk of leaving out caring occupations beyond those that are traditionally thought of as care work. This study provides a novel way of counting care that could enhance previous conceptions of care work or be used to create new care paradigms by drawing from empirical and continuous occupational data. In the face of COVID-19, accounting for the amount of care that workers are expected to perform may help policy makers pinpoint and support a broader group of essential workers (i.e., grocery store

workers, custodial staff, postal workers) who are not generally classified as care workers but nonetheless provide caregiving services (Stewart 2020).

Third, this study makes it clear that the health of early-career workers is an essential topic of study. Patterns in early-career health not only allow us to preview future health disparities, but also demonstrate how occupational characteristics can "get under the skin" early on and contribute to the stratification of health by occupation. This study examined circulating inflammation among a young, otherwise healthy subset of workers. Despite their youthful robustness, almost 40 percent of the sample—irrespective of whether they were in care-work or non-care work occupations—already exhibited increased levels of inflammation (Shanahan et al. 2014). This study found that being a care worker was also associated with increased inflammation and that specific occupation-level factors, such as level of required ethical responsibility, seem to drive this association. These results suggest that, even early on, work characteristics may matter in ways that shape one's risk for chronic disease and earlier onset of such disease. Specific care-work occupations have long been associated with chronic disease (Bernstein et al. 2002). To protect and improve the later-life health of workers in these occupations, it's imperative to understand the factors that shed light on early-career health.

In current times, COVID-19 has created new demands on the health, education, and social services sectors, and early research finds that the pandemic has already had a negative impact on care workers' health (Lai et al. 2020). This sustained and intensified occupational stress among care workers is likely to contribute to an influx of chronic disease among these workers in the coming years. Early detection of disease risk factors and efforts to alleviate them are crucial if we are to meet these care workers' health care needs today and tomorrow.

Fourth, early-career workers are a critical segment of the labor force whose experiences offer a lens through which we can see how work affects health. Young adults sometimes change careers due to burnout after the first few years of working, and this pattern is especially common for care workers (Hamidi et al. 2018; Morrison 2019). To understand the health consequences of occupational stress among early-career workers, we must study both workers that will eventually leave and workers that will stay in their line of work. Focusing on early-career workers makes it possible to understand how early work experiences leave their mark on later-life health, even if the worker eventually changes careers. Although efforts are being made to protect care workers from the increased demands of COVID-19, we can expect to see greater burnout and stress-related worker attrition in the care workforce for years to come (Saleh 2020). Because pandemics have been linked to the development of post-traumatic stress in care workers, we can expect both those that will stay in care work and those that will leave to experience health repercussions from having experienced vicarious trauma (National Center for Posttraumatic Stress Disorder 2020).

Fifth, the health implications of care work may be strongest among the least educated. Results suggest that inflammation was most associated with care work among those with a terminal high school degree or less, even after accounting for sociodemographic circumstances and individual workplace factors linked to suboptimal health. Future research should include qualitative efforts to tease apart how the demands of care work vary by educational attainment. At the same time, we might expect the differences in health between the most and least credentialed care workers to narrow as COVID-19 presents more ethically charged demands and heightened workloads for doctors, nurses, teachers, and other care workers with education beyond a college degree. The health care, education, and social service sectors have restructured

care delivery in the face of the pandemic, and this restructuring will likely have implications for all care workers, but particularly the most credentialed (Liu et al. 2020)

Despite its key theoretical and methodological strengths, this study has several limitations that future work may address. First, although the analysis drew on longitudinal data, it did not control for measures of inflammation from prior waves that would account for baseline differences in inflammation resulting from pre-work factors. Future studies may use early-career levels of inflammation as a baseline for predicting later inflammation or other health statuses at later career stages within the same individual. Future waves of Add Health data that continue to follow the workers in this study will make such research possible. Second, this study examined the moderating role of educational attainment on the association between care work and inflammation while controlling for sex/gender and race/ethnicity. However, most care-work occupations are female-dominated, and many physically intensive care workforces are largely made up of people of color (Duffy 2005). Future work should examine whether sex/gender and race/ethnicity moderate the relationship between being a care worker and health. Third, this study's results demonstrate differences in health between care- and non-care workers before the COVID-19 pandemic. Due to the changing demands of care work at the current demographic moment, future data collection efforts should continually collect biomarker data from the care workforce to be able to better serve their health needs over the next several decades.

This study contributes to the care-work literature by using occupational requirements to measure care work and to the broader occupational health literature by focusing on occupation-level stratification of health. This study also shows that educational attainment and ethical responsibility shape care workers' health early on in their careers in ways that may influence their risk of chronic disease later in the life course.

Chapter 3: Occupational Requirements and Job Satisfaction among Early-Career Care Workers

How satisfied we are with our jobs goes a long way toward shaping how our jobs affect our lives (Faragher, Cass, and Cooper 2013; Judge and Watanabe 1993). Understanding how we experience our jobs, therefore, has long been an important topic of public discussion and scholarly research. Such experiences are often viewed in highly individualistic terms, reflecting individual workers' preferences, specific workplace conditions, and the match between the two. Sociological approaches, however, emphasize the value of embedding workers and workplaces in a larger, dynamic, and often highly stratified structural context. These approaches stress the importance of contextualizing individual workers and their jobs within broader occupational strata that encompass general *patterns* of conditions and rewards, including what workers can expect on the job and what is expected of them (Kalleberg 1977; Marchland, Demers, and Durand 2005). Such approaches also situate workers within career stages (e.g., early, middle, and late career) that help shape associations between work and worker wellbeing (Cohen 1991).

General occupational requirements—or the tasks, responsibilities, and values associated with specific occupations (Johnson and Hall 1988; Karasek 1979)—are a major part of this contextualization that can shape individuals' experiences on the job and across the career in ways that aggregate into systemic disparities in work-related wellbeing (Kahya 2007; Marklund, Bolen, and von Essen 2008). A wide variety of occupational requirements have been shown to factor into job satisfaction and dissatisfaction, ranging from building relationships, to serving others, to making consequential decisions (Allan, Duffy, and Collisson 2018; England 2005; England, Folbre, and Leana 2012; Grant 2007; Hochschild 1983; Näring, Vlerick, and Ven 2012; Ray et al. 2013; Thompson, Amatea, and Thompson 2014). Another salient aspect of occupations that contributes to job satisfaction is gender composition, with men and women

funneled into specific sectors of the labor force that both reflect and reinforce dominant societal gender norms (Acker 1990; Charles and Grusky 2005; Tomaskovic-Devey et al. 2006). Consequently, the distribution of occupational requirements across gender-segregated occupations means that men and women have unequal opportunities to positively experience their work in ways that promote wellbeing.

The growing and increasingly important occupational sector known as care work is an ideal setting in which to consider such disparities and how they arise, especially when young adults are just beginning their careers. Caring occupations (e.g., nurses, teachers, and social workers) provide face-to-face services in the context of interpersonal relationships that help people develop and improve valued aspects of their lives (England and Folbre 1999). Despite working in such disparate sectors as education, health care, and social service industries, members of the care workforce have a few striking commonalities. They tend to be more satisfied with their jobs and careers than those employed in non-care work sectors, even though care work occupations are notorious for having high rates of early-career burnout and turnover (Matheson et al. 2019; Ray et al. 2013; Thompson, Amatea, and Thompson 2014). Care workers also experience occupational requirements often linked to job satisfaction, including paying attention to the needs of others (i.e., compassion), taking responsibility for meeting those needs (i.e., ethical responsibility and therapeutic responsibility), building relationships with clients (i.e., sociality), and engaging in hands-on tasks of care (i.e., direct service provision) (Collins 2008; Fisher and Tronto 1990; Grönlund and Öun 2018; Hebson, Rubery, and Grimshaw 2015; Lightman and Kevins 2019; Sousa-Poza and Sousa-Poza 2000). Such patterns suggest that care workers—despite experiencing more early-career turnover—are more satisfied with their work than similar workers in other occupational sectors because they enjoy greater opportunities to

experience some of these on-the-job conditions. Yet, the gender segregation of care work—with women greatly overrepresented (Duffy 2011; England, Budig, and Folbre 2002)—and cultural traditions typing many caring activities as feminine (Akerlof and Kranton 2000; Cortes and Pan 2018; Williams 1992) suggest that these occupational linkages so crucial to wellbeing could be gendered in complex ways.

This study targets this intersection of the general case of gendered linkages between occupational requirements and job satisfaction with the specific case of care work by using data from both Wave IV of the National Study of Adolescent to Adult Health (Add Health) and the Occupational Information Network (O*NET) to explore gendered differences in and returns to job satisfaction between care work and non-care work occupations. This approach highlights the early-career stage as a pivotal point to measure and understand the factors contributing to the wellbeing of care workers, given high rates of early-career turnover within this workforce. The study's basic conceptual model posits that care workers will have greater job satisfaction because of their greater exposure to highly rewarding occupational requirements but also that, within this interplay, women and men will differ in which occupational requirements matter to their job satisfaction and how much they matter. Testing this conceptual model will significantly contribute to the sociological literatures on gender, work, and wellbeing by disentangling why certain theoretically linked categories of occupations are more satisfying than others, how the answer to this question may differ by the gender of the people doing the work, and whether men and women reap similar benefits from the same set of occupational requirements.

BACKGROUND

Job Satisfaction and its Linkage to Occupational Requirements

Work is a fundamental life course pathway that is strongly linked to physical and psychological wellbeing (McLellan 2017; Pavalko, Elder, and Clipp 1993). For example, some workers experience more positive emotional reactions and attitudes toward their jobs than others (i.e., job satisfaction) (Faragher, Cass, and Cooper 2005; Oshagbemi 1999). These differences in job satisfaction, in turn, contribute to disparities in multiple dimensions of socioemotional wellbeing not directly tied to work, such as life satisfaction, positive affect, and happiness, and offer different levels of protection against stress, burnout, depression, and anxiety (Bowling, Eschleman, and Wang 2011).

Although some component of job satisfaction is likely to be idiosyncratic (i.e., having a supportive supervisor), job satisfaction also varies in systematic ways that reflect the highly stratified nature of the labor market. In other words, some people enter into sectors of the labor market that are more likely to promote their job satisfaction than others. Those systematic differences can reflect stratification of the external and instrumental rewards that jobs bring (e.g., money), but also more social psychological dimensions of everyday experiences and interactions at work that foster positive attitudes and feelings about what one does for a living (Kahya 2007; Marklund, Bolen, and von Essen 2008). Some of these dimensions include occupational requirements that are correlated with job satisfaction, like making consequential work-related decisions, helping others, and forming meaningful interpersonal relationships (Allan, Duffy, and Collisson 2018; Grant 2007). Alternatively, there are also occupational requirements correlated with job dissatisfaction, such as direct service provision and performing emotionally and/or

physically tasking work (England 2005; England, Folbre, and Leana 2012; Hochschild 1983; Näring, Vlerick, and Ven 2012; Ray et al. 2013; Thompson, Amatea, and Thompson 2014).

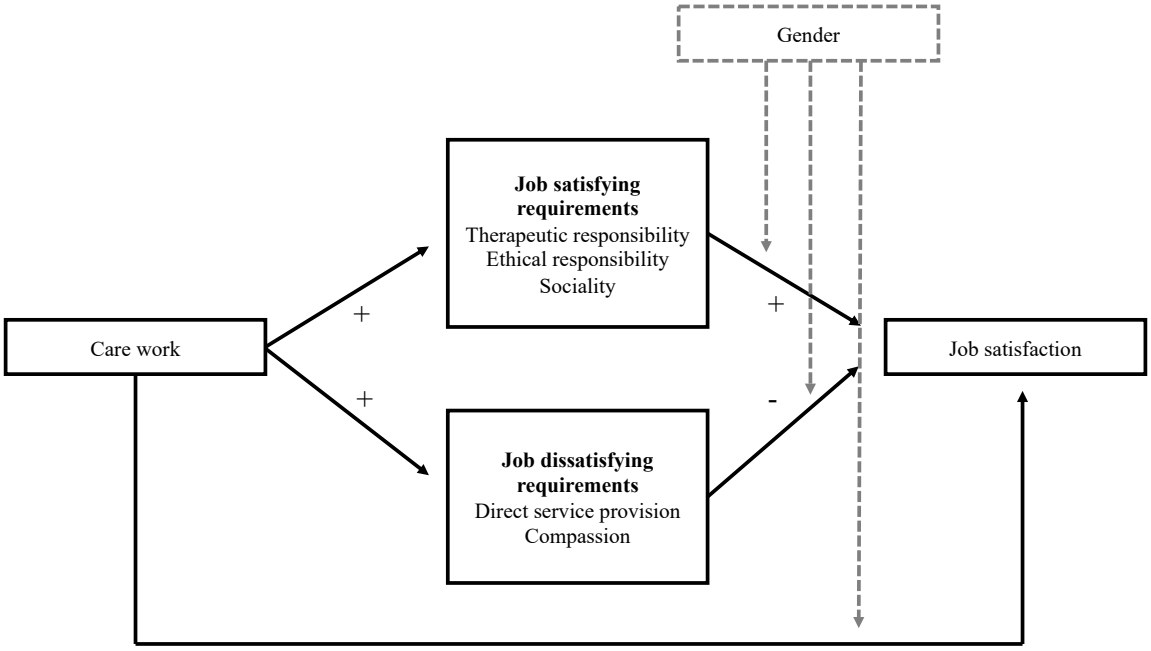
Thus, one's position in an occupational sector can alter the odds of exposure to different occupational requirements, some of which are more likely to enhance job satisfaction than others. Consider the case of care work, which includes people who work as medical staff, child care workers, and social service providers, among others (Duffy 2011). In its many forms, care work often involves substantial emotional and physical labor through strong demands for compassionate and direct service provision (Hochschild 1983; Näring, Vlerick, and Ven 2012; Ray et al. 2013; Thompson, Amatea, and Thompson 2014). Yet, these potentially dissatisfying occupational requirements are countered by other experiences that are likely to be more satisfying and that are more in line with widespread sentiments—among care workers themselves and society at large—that caring occupations are deeply meaningful and satisfying lines of work (Bullough and Hall-Kenyon 2012; Dossey 2018; Duffy, Oyebode, and Allen 2009; Emerson 2017; Hall and Chandler 2005; Holland 2015; Ulrich et al. 2007). For example, care workers are expected to make consequential decisions in the context of interpersonal client-provider relationships that directly affect clients' lives (Duffy, Oyebode, and Allen 2009; Stolle 1996; Ulrich et al. 2007).

These job experiences are in the same spirit as occupational requirements that are associated with job satisfaction, including participation in decision-making, helping others, and maintaining relationships. Consequently, care workers face a complex mix of occupational requirements. Given cross-national evidence that care workers have higher levels of job satisfaction than their non-care-working peers (Lightman and Kevins 2019), the more positive requirements would seem to outweigh more negative ones. At the same time, care work

occupations have high levels of worker turnover, especially early in the career. Thus, understanding the factors that contribute to job satisfaction during the critical early-career stage is key to retaining and supporting workers within these essential occupations.

The first goal of this study, therefore, is to examine the linkages among care work employment, the specific occupational requirements of this type of work, and job satisfaction, especially during the early-career stage. Specifically, the occupational hypothesis is that care workers' greater job satisfaction will be driven by the benefits associated with their greater exposure to highly rewarding occupational requirements like ethical responsibility, therapeutic responsibility, and sociality, which offset the risks associated with their greater exposure to less rewarding requirements like direct service provision and compassion (see Figure 3.1a).

Figure 3.1a. Conceptual model linking care work, occupational requirements, gender, and job satisfaction among all workers



Gendered Linkages between Occupational Requirements and Job Satisfaction

Any consideration of the link between occupational requirements and job satisfaction must pay attention to gender. After all, women report higher levels of job satisfaction than men (Hauret and Williams 2017), and female-dominated occupations tend to have more satisfied workers than occupations populated more by men (Bender, Donohue, and Heywood 2005; Steinmetz 2012). How occupational requirements factor into these patterns is less clear, given that gender socialization can influence the types of occupational requirements to which men and women are attracted and value.

Gender, furthermore, may differentially influence men's and women's experiences of the occupational requirements to which they are eventually exposed (Lawson, Crouter, and McHale 2015; Limiñana-Gras et al. 2013; Sevier and Ashcraft 2009). For example, men may both be more attracted to physically demanding occupations (i.e., construction, military) *and* derive greater psychological benefits from these jobs compared to women because they conform to hegemonic masculine ideals of manly work. On the other hand, women may select into and enjoy occupations that allow them to carry out hegemonic feminine ideals of womanhood at work (Kelan 2010). Disentangling these linkages among gender, occupational requirements, and job satisfaction is important given the increasing number of men in pink-collar jobs traditionally held by women (National Public Radio, 2012).

Focusing on care work serves that purpose. Although generally thought of as "women's work", care work is comprised of occupational requirements that stress both traditionally masculinized (e.g., problem-solving, risky decision-making) and traditionally feminized (e.g., helping, affiliating) skills. As a result, care-working men and women may focus on different aspects of their jobs and derive different meaning from them in ways that correspond to their

learned gender roles (Kelan 2010; Levy, Sadovsky, and Troseth 2000; Watt 2010; Wrzesniewski and Dutton 2001). This study considers two ways that gender may qualify (i.e., moderate) the links among care work, its occupational requirements, and worker job satisfaction.

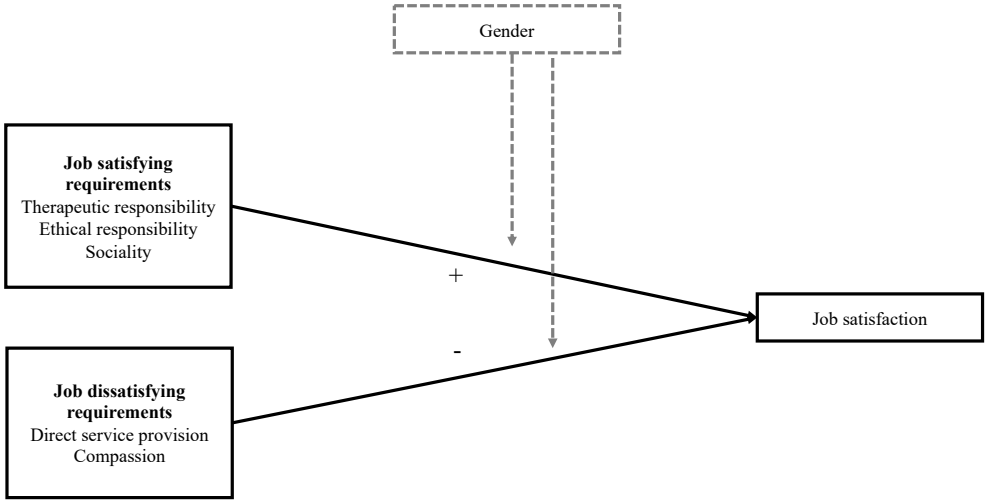
First, gender may influence which occupational requirement does the most to mediate the associations between care work and job satisfaction. In other words, a collection of occupational requirements might help to explain why care workers have higher job satisfaction than non-care workers, but, within this collection, some occupational requirements might have more explanatory power for women than men (and vice versa). For example, because sociality and therapeutic responsibility most closely align with women's gendered socialization toward "tending and befriending" (Taylor 2006), these two occupational requirements may be stronger mediators of associations between care work and job satisfaction for women than men. As another example, because men are more likely to identify with ethical responsibility around risky but calculated decision-making (Courtenay 2000), this occupational requirement may be a stronger mediator of the association between care work and job satisfaction for men than women. In both cases, the question is not whether occupational requirements link care work to job satisfaction for workers of both genders, but instead what are the key linkages for women and whether they are the same for men.

Second, and more specifically, gender may also influence the strength of the association between occupational requirements and job satisfaction. In other words, requirements that are generally satisfying may be more satisfying for one gender than the other. Although the wellbeing of men may suffer when they work in female-dominated occupations, men may also benefit from a "glass escalator" effect in such occupations, whereby they are given disproportionately more opportunities for advancement and compensation than their female

counterparts (Dill, Price-Glynn, and Rakovski 2016; Hsu et al. 2010; Limiñana-Gras et al. 2013; Williams 1989; Williams 1992). At the same time, because societally prescribed female gender roles (e.g., mother, homemaker, caregiver, and listener) already relegate women to being both therapeutically and ethically responsible for others and more social outside of their jobs, women may benefit less than men from these positive aspects of their formal care work jobs (Collins 2019; Hochschild 2001; Umberson and Karas Montez 2010). Thus, the question is not whether care work exposes men and women to satisfying occupational requirements, but rather whether those requirements are more satisfying for men than women.

The second goal of this study, therefore, is to examine the degree to which the focal linkages presented in Figure 3.1a between care work, its occupational requirements, and job satisfaction differ by gender. Specifically, the first gender hypothesis is that the care work advantage in job satisfaction will be most strongly mediated by sociality and therapeutic responsibility for women, but ethical responsibility for men. The second gender hypothesis—restricted to care workers and presented in Figure 3.1b—is that care-working men will experience greater returns to job satisfaction than women for being in work characterized by greater ethical responsibility, therapeutic responsibility, and sociality.

Figure 3.1b. Conceptual model linking gender, occupational requirements, and job satisfaction among care workers



DATA AND METHODS

This study used a subsample of early-career adults in the National Longitudinal Study of Adolescent to Adult Health (Add Health). The focus on early-career adults speaks to the greater likelihood of workers at this career stage experiencing turnover compared to other age segments of the workforce (Lee et al. 2017). Add Health is a nationally representative study of U.S. adolescents who were interviewed during the 1994-1995 school year (Wave I) and then followed into their adult lives to Wave IV, when they were between the ages of 24 and 34. The Wave IV sample includes early-career young adults with accompanying demographic characteristics from Wave I and measures of general health and prior employment from Wave III. Around 15,300 Wave IV respondents provided information about their current occupation, which was coded by the Add Health research team using the Standard Occupational Classification (SOC) system. Most respondents were coded using distinct, detailed six-digit SOC-coded occupations (e.g., phlebotomists distinctly coded as 31-9097, nursing assistants coded as 31-1014). Some, however, were given more generic SOC codes that did not uniquely describe occupations but

comprised a residual "All Other" group within each broader occupational category (i.e., All Other Healthcare Support Workers coded as 31-9099). The analytical sample included 6,861 respondents in the civilian labor force who worked for at least ten hours a week, had a distinct (e.g., not considered in an "All Other" category) occupational code, had a measure of job satisfaction at Wave IV, and had valid strata, clustering, and weighting data (to account for Add Health's design effects and biases associated with attrition from the sample across waves).

The second data source, O*NET, is maintained by the U.S. Department of Labor as a primary source of occupational information. Based on the Standard Occupational Classification system, O*NET includes biannually updated information on 974 occupations that span the U.S. economy. The O*NET provides estimates of over 200 occupational characteristics (e.g., knowledge, skills, and abilities needed for each occupation) that can be used as variables in their own right or combined into multi-item inventories (Crouter et al. 2006). To obtain these measures, O*NET selects a random subset of workers within each occupation (sampled from businesses and professional or trade organizations) to complete a standardized questionnaire on occupational characteristics. Sample respondents have a 64-74% response rate (U.S. Department of Labor 2018). These data are then cleaned, weighted, and pooled by O*NET staff to produce a set of final estimates that properly account for the combined effects of clustering, stratification, and unequal weighting. Each variable estimate is based on responses from 15 or more respondents, which ensures that mean values for all Likert type variables have 95% confidence intervals of less than plus or minus 1.10 for all occupations (Peterson et al. 2001).

Previous studies have used occupational codes to merge occupation-level data from the O*NET with nationally representative data sets such as the National Health Interview Survey (NHIS) and the National Health and Nutrition Examination Survey (NHANES) (Alterman et al.

2008). Following this tradition, I merged O*NET data into Add Health using SOC codes, which are assigned to each occupation in both data sets. Because SOC codes change over time as occupations are added or removed, the current study merged archived O*NET data from 2008 (O*NET Version 13.0) into the Add Health Wave IV data to correspond with the calendar years in which the Add Health data were collected.

Measurement

Employment in care work occupations. I dichotomized Add Health respondents as employed in care work or non-care work occupations. This categorization of occupations as care work drew on existing lists derived by Duffy (2005), who used prior conceptions of care work and criteria from the *Index of Industries and Occupations* and *Dictionary of Occupational Titles* to compile a list of nurturant care occupations and their Census codes. I adapted these lists to include Add Health and O*NET SOC coded occupations that correspond to similar Census codes. For a list of care work occupations in this study, see Appendix A. Eighteen percent of the sample was employed in care work (See Table 3.1).

Table 3.1. Weighted descriptive statistics for full, care-, and non-care-working subsamples

	Full Sample (n = 6,861)		Care Workers (n = 1, 318)		Non-care Workers (n = 5,543)	
Variables	Mean or Proportion	*SD*	Mean or Proportion	*SD*	Mean or Proportion	*SD*
Independent Variables						
Employed in Care Work	0.18		1.00		0.00	
Compassion	3.68	0.40	4.09	0.28	3.59	0.36
Therapeutic Responsibility	3.01	0.48	3.52	0.42	2.90	0.41
Ethical Responsibility	3.38	0.50	3.60	0.40	3.33	0.50
Direct Service Provision	3.79	0.47	4.04	0.27	3.74	0.49
Sociality	3.85	0.38	4.20	0.29	3.78	0.35
Dependent Variables						
Job Satisfaction	3.92	0.89	4.06	0.88	3.89	0.89
Covariates						
Occupational Prestige	5.02	1.62	5.35	1.64	4.95	1.61
Education						
High School or Less	0.23		0.08		0.27	
Some College	0.45		0.42		0.46	
College	0.20		0.23		0.20	
Beyond College	0.11		0.28		0.07	
Female	0.45		0.79		0.38	
Racial/ethnic Minority						
Non-Hispanic White	0.67		0.68		0.67	
Non-Hispanic Black	0.14		0.17		0.14	
Hispanic	0.11		0.10		0.12	
Non-Hispanic Asian	0.03		0.03		0.03	
Multiracial	0.04		0.03		0.05	
Marital Status at Wave IV						
Married	0.31		0.38		0.29	
Cohabitated	0.43		0.38		0.44	
Dating	0.19		0.15		0.20	
Single	0.07		0.08		0.07	
Same Occupation as Wave III	0.01		0.01		0.01	
Job Physicality						
Seated Work	0.38		0.16		0.42	
Light Physical Work	0.22		0.42		0.18	
Moderate Physical Work	0.24		0.37		0.21	
Hard Physical Work	0.16		0.04		0.18	
Hours Worked Per Week						
10-19	0.03		0.04		0.03	
20-29	0.07		0.08		0.06	
30-39	0.14		0.22		0.13	
40-49	0.52		0.46		0.54	
50-59	0.15		0.12		0.15	
60-69	0.06		0.04		0.06	
70+	0.03		0.03		0.03	

Table 3.1 continued on next page.

Table 3.1 (continued)

Variables	Full Sample (n = 6,861) Mean or Proportion	*SD*	Care Workers (n = 1, 318) Mean or Proportion	*SD*	Non-care Workers (n = 5,543) Mean or Proportion	*SD*
Repetitive Tasks on the Job						
None/Almost None of the Time	0.06		0.07		0.06	
Some of the Time	0.32		0.31		0.32	
Most of the Time	0.32		0.36		0.31	
All/Almost All of the Time	0.29		0.26		0.30	
Job Decision-Making						
None/Almost None of the Time	0.06		0.03		0.06	
Some of the Time	0.23		0.22		0.24	
Most of the Time	0.36		0.44		0.35	
All/Almost All of the Time	0.35		0.31		0.35	
Had Employee Health Care	0.75		0.78		0.74	
Had Retirement Benefits	0.67		0.72		0.66	
Had Paid Sick Leave	0.76		0.80		0.75	
Income at Wave IV (Thousands)	38.32	38.97	31.86	22.48	39.73	41.35

Specific occupational requirements of care work. Drawing on definitions of care work from the literature (England and Folbre 1999; Fisher and Tronto 1990), I pulled occupation-level items from the O*NET that most closely mirrored the five occupational requirements associated with care work (therapeutic responsibility, sociality, compassion, ethical responsibility, and direct service provision). All were measured on a scale from 1 to 5, with 5 indicating how important each was to the worker's performance of her current job (see Appendix B for descriptive statistics for all occupation-level items). I then examined the extent to which O*NET items loaded onto each occupational requirement. For each occupational requirement, all items demonstrated good average inter-item reliability (Cronbach's alpha ranged from 0.79 to 0.86). See Table 3.2 for the O*NET (Version 13.0) items corresponding to each occupational requirement and associated Cronbach's alpha levels. See Appendix C for pairwise correlations between items corresponding to each occupational requirement.

Table 3.2. O*NET (Version 13.0) occupational requirements comprising care work

Requirement	Definition	O*NET items	α
Therapeutic Responsibility	Commitment to helping clients improve aspects of life that they value	Assisting and caring for others	0.81
		Instructing	
		Coaching and developing others	
		Teaching and training others	
		Providing consultation or advice to others	
Sociality	Providing services in the context of a relationship	Social orientation	0.79
		Establishing/maintaining interpersonal relationships	
		Cooperation	
Compassion	Paying attention to the needs of others	Active listening	0.85
		Social perceptiveness	
		Concern for others	
		Service orientation	
Ethical Responsibility	Commitment to making difficult decisions in the best interest of their clients	Judgment and decision-making	0.84
		Making decisions and solving problems	
		Evaluating information to determine compliance with standards	
		Interpreting the meaning of information for others	
		Documenting/recording information	
Direct Service Provision	Engaging in the hands-on daily tasks of care	Performing for or working directly with the public	0.86
		Contact with others	
		Self-control	
		Stress tolerance	
		Dealing with external customers	
		Dealing with unpleasant or angry people	

I then created index scores for each of the five occupational requirements by averaging the items that loaded onto each. For example, the "compassion" score averaged the following O*NET items: "active listening," "social perceptiveness," "concern for others," and "service orientation." Higher scores indicated greater importance of each occupational requirement for the occupation. The sample means for occupational requirement scores ranged from 3.01 (*SD* = 0.48) for therapeutic responsibility to 3.85 (*SD* = 0.38) for sociality.

Job satisfaction. Add Health participants were asked "How satisfied are you with this job as a whole?" and responded on a 5-point scale from 1 (very dissatisfied) to 5 (very satisfied). The sample had a mean job satisfaction score of 3.92 (*SD* = 0.89)

Sociodemographic circumstances. The first set of covariates included factors associated with selection into care work occupations, including being a woman (Wave I), being a racial/ethnic minority (Wave I), educational attainment (Wave IV), occupational prestige (Wave IV), having a lower income (Wave IV; Duffy 2005; England and Folbre 1999), and marital status (Wave IV). This study also controlled for whether the respondent was in the same occupation as at Wave III because of documented associations between job tenure and job satisfaction (Dobrow Riza, Ganzach, and Liu 2018). Another set of covariates measured confounds related to individual workplaces, including Add Health respondents' appraisals of job demand, job control, and job support at Wave IV. Descriptive statistics for the full sample, as well as the care work and non-care work sample can be found in Table 3.1.

Plan of Analysis

The analytical strategy involved estimating a series of structural equation models in Stata's *sem* suite (StataCorp 2017), accounting for Add Health's complex survey design through the use of appropriate sample weights, strata, and clustering. The results section reports

unstandardized coefficients (*b*), standard errors (*SE*), and *p* values (*p*) for results from linear regression analyses, and standardized coefficients (β) and standard errors (β *SE*) for mediation models. I used two-tailed hypotheses tests, basing conclusions regarding statistical significance on an alpha value of 0.05.

The baseline model regressed job satisfaction on a dichotomous indicator of being in a care work occupation and the full set of covariates. Testing the occupational hypothesis involved estimating mediational paths from care work employment to job satisfaction through each of the five care work occupational requirement variables. The *medsem* command (Mehmetoglu 2018) simultaneously estimated the indirect effects in the mediation model for the parallel mediators using Baron and Kenny's (1986) approach, and calculated the Sobel test to determine their significance (Preacher and Hayes 2008). Standardized estimates are presented in the text and graphically in Figure 3.2.

Testing the first gender hypothesis involved first fitting the baseline model with the inclusion of a care work x gender interaction term to predict job satisfaction, and then examining moderated mediation by adding an interaction term between gender and each occupational requirement predicting job satisfaction (see dashed lines in Figure 3.1a). In this moderated mediation model, evidence of moderation—signified by a significant interaction between gender and occupational requirements in models predicting job satisfaction—would suggest that different occupational requirements mediated links between care work and job satisfaction more for men relative to women, and no such evidence would indicate that the same mediators were at work for both. In the final step, I conducted separate models for each occupational requirement with the inclusion of a gender x occupational requirement interaction term in the subsample of

1,318 care workers (n = 1,318; see Figure 3.1b) to determine whether the association between each occupational requirement and job satisfaction differed by gender.

The focal dependent and independent variables had no item-level missingness because I restricted the sample to Wave IV Add Health respondents with both detailed SOC-coded occupations and a measure of current job satisfaction. There was no missingness on mediating variables because all detailed SOC codes had corresponding O*NET data. The majority of covariates had some level of missing data, albeit low (i.e., less than 1%), although 4% of respondents were missing a measure of income at Wave IV. All item-level missing data were successfully recovered using full information maximum likelihood estimation, resulting in the inclusion of all 6,861 respondents in all models using the full sample and 1,318 respondents in all models using the care work sample.

RESULTS

Explaining the Care Work Advantage in Job Satisfaction

As presented in Model 1 of Table 3.3, employment in care work was associated with a 0.15-point increase in job satisfaction compared to employment in another line of work, net of the full set of covariates (b = 0.15, SE = .03, $p < .01$). Building on this baseline model, I estimated path analyses that incorporated the focal occupational requirements as potential mediators. Figure 3.2 presents these mediational pathways, with all estimates standardized for ease of interpretation.

The addition of the five occupational requirements of care work to the model resulted in a partial reduction of the direct path between care work and job satisfaction (β = 0.12, β SE = .05, $p < .05$). For the first part of the mediational pathway, care work significantly predicted all five

of the occupational requirements most closely tied to care work ($p < .001$ in all cases). Specifically, employment in care work was associated with between a 0.47 and 1.20 standard deviation increase in these requirements compared to non-care work. For the second part of the mediational pathway, ethical responsibility was the only occupational requirement that significantly predicted job satisfaction ($\beta = 0.06$, β *SE* = .02, $p < .01$). The ratio of the indirect effect of ethical responsibility and total effect of care work on job satisfaction was 0.185 (indirect effect = 0.027, total effect = 0.15). In other words, 19% of the observed effect of care work employment on job satisfaction was mediated by ethical responsibility. This mediated effect is 0.2 times as large as the direct effect of care work employment on job satisfaction.

Table 3.3. Results from structural equation models predicting job satisfaction among all workers by employment in care work and gender

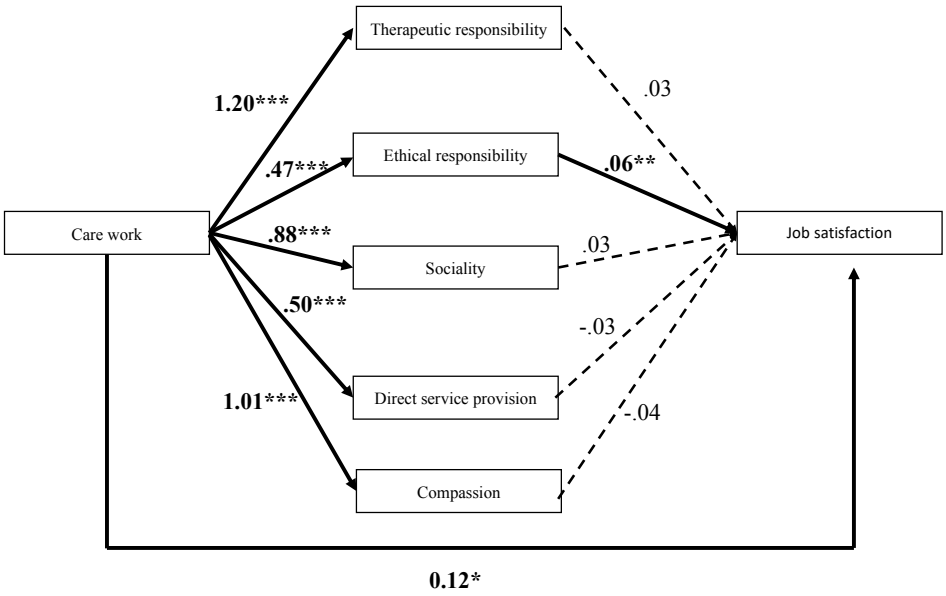
	Model 1			Model 2		
Variables	*b*	*SE*	*p*	*b*	*SE*	*p*
Employed in Care Work	0.15	0.03	**	0.19	0.07	**
Gender (Female)	0.03	0.03		0.04	0.04	
Interactions (Ref. Male, Non-care Worker)						
Female x Care Worker				-0.07	0.08	
Constant	2.95	0.10	***	2.95	0.10	***

Note: n = 6,861, all models controlled for a full set of covariates. * $p < .05$, ** $p < .01$, ***, $p < .001$

There appeared to be only one mediational pathway at work, with ethical responsibility linking care work to greater job satisfaction. To test whether this mediational pathway was statistically significant, I employed Baron and Kinney's four steps of mediation and then conducted Sobel's tests using *medsem*. Sobel's tests indicated that the inclusion of ethical responsibility in the baseline model significantly reduced the previously observed association between job satisfaction and care work ($z = 2.709$, $p < .01$), controlling for all other care work requirements, even though it remained significant. These results suggest that ethical responsibility partially mediated the association between employment in care work and job

satisfaction. These results to some degree support the occupational hypothesis that care workers' greater job satisfaction would be driven by greater exposure to highly rewarding occupational requirements that offset less rewarding occupational requirements. Yet, ethical responsibility proved to be the only occupational requirement that fit this hypothesized pattern, and none of the less rewarding requirements played a significant role in job satisfaction either.

Figure 3.2. Paths and standardized coefficients for mediation model predicting job satisfaction by employment in care work for each occupational requirement



Note: Bolded paths and standardized coefficients are statistically significant (* $p < .05$, ** $p < .01$, *** $p < .001$). Estimates controlled for a full set of covariates.

Gender and the Care Work Advantage in Job Satisfaction

As presented in Model 2 of Table 3.3, gender did not significantly interact with care work to predict job satisfaction, suggesting that both men and women experienced similar boosts in job satisfaction from being employed in care work. Gender also did not significantly interact with any occupational requirement, suggesting that there were no differences between men and women in which characteristics—including ethical responsibility—mediated the association

between care work and job satisfaction. In other words, there were no gender differences in which occupational requirements served as mediators *or* acted as the most important mediators.

The final step examined the "return" to job satisfaction of each occupational requirement in the subsample of care workers. The results of Models 1-4 in Table 3.4 revealed that the links between various occupational requirements and job satisfaction were greater for men than women. Specifically, gender interacted with therapeutic responsibility (Table 3.4, Model 1: b = -0.46, SE = 0.15, $p < .01$), ethical responsibility (Table 3.4, Model 2: b = -0.47, SE = 0.16, $p < .01$), sociality (Table 3.4, Model 3: b = -0.47, SE = .22, $p < .05$), and compassion (Table 3.4, Model 4: b = -0.52, SE = 0.25, $p < .05$) to predict care workers' job satisfaction.

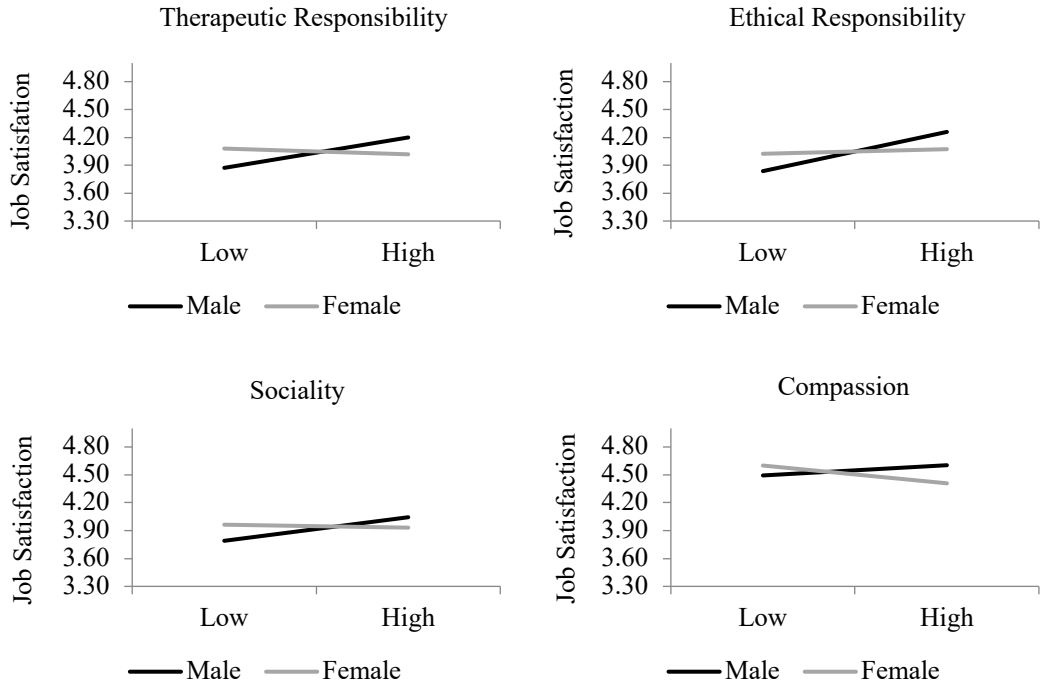
To visualize main and interaction effects, Figure 3.3 features predicted mean values of job satisfaction for both care-working men and women in cases where gender moderated the association between the occupational requirement and satisfaction. According to Figure 3.3, men appeared to derive more job satisfaction than women from caring occupations requiring greater ethical and therapeutic responsibility, compassion, and sociality. Also, women's job satisfaction declined as expectations of therapeutic responsibility, sociality, and compassion increased. Although women seemed to benefit from doing ethically responsible work, their returns to job satisfaction tended to diminish with increasing ethical responsibility. Thus, support for both gender hypotheses was mixed, suggesting the existence of care work advantage in job satisfaction overall, but not the possibility of gender differences in occupational requirements driving this care work advantage. Furthermore, care-working men enjoyed higher returns to job satisfaction from performing the more masculinized requirements, as well as from performing the more feminized requirements associated with this type of work.

Table 3.4. Results from structural equation models predicting job satisfaction by occupational requirements and gender among care workers

	Model 1			Model 2			Model 3			Model 4		
Variables	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*	*b*	*SE*	*p*
Gender (Female)	1.64	0.54	**	1.68	0.58	**	1.94	0.95	*	2.14	1.04	*
Occupational Characteristics												
Compassion	-0.17	0.15		-0.17	0.16		-0.17	0.16		0.19	0.21	
Therapeutic Responsibility	0.40	0.14	**	0.03	0.11		0.04	0.11		0.05	0.11	
Ethical Responsibility	0.18	0.14		0.53	0.19	**	0.21	0.14		0.19	0.14	
Direct Service Provision	-0.08	0.19		-0.07	0.19		-0.08	0.19		-0.07	0.20	
Sociality	0.11	0.17		0.13	0.17		0.48	0.25		0.11	0.18	
Interactions (Ref: Male x Requirement)												
Female x Therapeutic Responsibility	-0.46	0.15	**									
Female x Ethical Responsibility				-0.47	0.16	**						
Female x Sociality							-0.47	0.22	*			
Female x Compassion										-0.52	0.25	*
Constant	1.54	0.71	*	1.41	0.78		1.22	0.89		1.23	0.96	

Note: n = 1,318, all models controlled for a full set of covariates. * $p < .05$, ** $p < .01$, ***, $p < .001$

Figure 3.3. Graphed interactions between occupational requirements and gender predicting job satisfaction among care workers



DISCUSSION

This study investigated occupational and gender hypotheses regarding whether the occupational requirements of care work explained the U.S. care work advantage in job satisfaction, and whether these linkages differed in gendered ways. It also examined whether care-working men and women differentially benefited from shared sets of occupational requirements. The results of structural equation models with Add Health and O*NET data support the existence of a care work advantage in job satisfaction, with one requirement—ethical responsibility—primarily explaining this advantage for both care-working men and women. At the same time, care-working men appeared to benefit more than women from high levels of occupationally-required responsibility (both therapeutic and ethical), sociality, and compassion.

These findings provide mixed support for both occupational and gender hypotheses. They support the notion that ethical responsibility is a job-satisfying requirement for care-working men and that men disproportionately benefit from healthful aspects of care work compared to women. Yet, only ethical responsibility—but not the other requirements, sociality and therapeutic responsibility that were hypothesized to matter—explained care-working women's job satisfaction advantage over their non-care-working peers. Thus, the care work advantage in job satisfaction can, in part, be explained by having ethical responsibility on the job that allows men and women to make consequential, sometimes heroic decisions that directly impact clients' lives. Apart from factors that make this type of work more satisfying, care-working men also enjoyed greater returns to job satisfaction than women from carrying out most other occupational requirements of care work. These results bring up four general themes for discussion and future research, namely (1) providing care workers with more institutional resources to make important decisions in the best interests of their clients; (2) re-socializing caring occupations as gender-inclusive in ways that help funnel more men into healthful occupations; (3) supporting care-working women who not only provide care on the job but also do the lions' share of caregiving at home; and (4) investing in ways to make less satisfying occupational requirements of care work more tolerable for those doing this important work.

First, ethical responsibility can weigh heavily on those who must make difficult decisions on a regular basis. Nonetheless, care workers get a great deal of satisfaction from making meaningful decisions that directly affect clients' lives. This satisfaction, however, is contingent on having the institutional resources to make such decisions. Care workers may feel empowered when their professional judgments are valued, but far too many care workers find themselves in workplaces with unsupportive management and supervisors that downplay or sidestep their

professional opinions in ethically difficult scenarios (Bogler and Nir 2012; Ulrich et al. 2007). Thus, although ethical responsibility is an important job-satisfying requirement of care work, whether or not care workers benefit from this aspect of their work largely depends on workplace, organizational, and professional norms around ethical decision-making. Some effective norms include interdisciplinary ethical decision-making and adoption and adherence to professional codes of conduct. Specifically, interdisciplinary ethical decision-making brings together and gives voice to the multiple professionals involved in providing care to a single client (e.g., teachers, social workers, occupational therapists, and speech pathologists) (Légaré et al. 2011; Nancarrow et al. 2013; Vongxaiburana et al. 2011). Teams of care workers with different sets of expertise can collectively prescribe plans of action that can help reduce stress associated with ethical decision-making. Second, shared codes of conduct can be an effective institutional support to which care workers may turn in ethically-difficult situations. These codes (e.g., National Association of Social Workers' Code of Ethics) provide an ethical framework for professional decision-making that reduces moral distress and bolsters job satisfaction (Weinberg 2009). Although the current study controlled for immediate workplace conditions, like job control and support, to isolate the influence of broader occupational requirements on care worker job satisfaction, future studies should also consider how norms around ethical decision-making amplify or dampen satisfaction from having ethical responsibility on the job.

Second, the care work advantage in job satisfaction is evident for both men and women even though care work is often characterized as "women's work." Men experience greater job satisfaction related to four out of five of care work's occupational requirements compared to women, but the care workforce is overwhelmingly female. One potential explanation is that men who choose to go into care work are more intentional in seeking out work that embodies these

positive requirements, as opposed to women who are societally steered toward caregiving roles (Simpson 2005). One important step in reducing work-related disparities in wellbeing is breaking down gender-normative occupational stereotypes that funnel men into blue- or white-collar work, and women into pink-collar work (National Public Radio 2012). This step is especially critical given the growing demand for caregiving services in an increasingly aging, care-dependent, and post-COVID-19 world (Rogers and Spring 2020; Rosseter 2020). Reframing care work as gender-inclusive can also help address other gendered health crises associated with declines in traditionally male dominated blue-collar jobs. One such crisis is the opioid epidemic, which has been linked to disappearing job prospects for low-skilled, mostly male workers (Maguire, Santos Miranda, and Winters 2019; Sobotka and Stewart 2020). Framing care work as gender-inclusive and highly satisfying may help direct more men, especially those most hard hit by the disappearance of blue-collar work, into in-demand jobs with good future prospects. Future studies may quantitatively or qualitatively investigate the experiences of men formerly employed in blue-collar work who have since transitioned into pink-collared work in order to understand how their job satisfaction has improved or declined since switching occupations.

Third, care-working women do not experience the same levels of job satisfaction as men from performing the same set of occupational requirements. Results suggest diminishing returns and even a downward slope in care-working women's job satisfaction as a function of greater ethical responsibility, therapeutic responsibility, and sociality requirements. One potential explanation is role overload, or the experience of not having the necessary resources for fulfilling one's multiple roles (Creary and Gordon 2016).

Employed women are thought to work two shifts, one on the job and one at home (Hochschild and Machung 2012). Consequently, care-working women face a double shift of

caregiving. Care-working women are not only expected to provide care on the job, but are also societally expected to maintain a home and family. Although women may enjoy being in care work occupations, overload from being constantly expected to provide care can lead to psychological distress and emotional exhaustion, which not only negate any health benefits of being in care work, but also are precursors to burnout and turnover (Matheson et al. 2019). This caregiving overload, however, can be lightened by policies and practices that support all care workers, but especially care-working women. One such practice is putting care-working women into more managerial roles, as opposed to more care-intensive jobs. Often, care-working men experience a glass escalator effect whereby they are fast tracked into leadership roles (e.g., shift leaders, administration) that are not only better paying but also more removed from hands-on care (Williams 1992). Establishing an organizational culture in which women are encouraged to take on influential, indirect care work positions may help offset the number of women facing care overload. Furthermore, having women in care work leadership roles may also influence policies around how to support women who care around the clock (Ali, Grabarski, and Konrad 2020; Grogan and Shakeshaft 2010). Future directions include investigating associations between care-working women's job satisfaction and the gender composition of their supervisors.

Fourth, compassion and direct service provision were not significantly associated with job satisfaction. These associations, albeit non-significant, did trend downwards, which suggests that these requirements may contribute to lower job satisfaction. Indeed, emotional labor associated with direct service provision and compassion have been linked to harmful surface acting and compassion fatigue (Näring, Vlerick, and Van de ven 2011). At the same time, prioritizing others' feelings and needs is an important aspect of care work. Thus, investing in strategies that buffer against the harmful effects of performing direct service provision and

compassionate care may further protect care workers against adverse work requirements. One set of strategies are institutional opportunities for expressing emotions and concerns (Erickson and Grove 2008). These opportunities can take the form of informal or formal social support groups within workplaces or within professions (Brotheridge and Lee 2002), comprehensive Employee Assistance Programs that offer short-term counselling and mental health referrals (Attridge 2019), and formal representation (e.g., union representative) in managerial decision-making processes (Seago et al. 2011), all of which have been linked to job satisfaction. Although this study included covariates for whether workers had work-related benefits, future studies can more closely address how such institutional supports combat compassion fatigue and other harmful aspects of care work.

Despite its contributions to the literature on work, gender, and wellbeing, this study had important limitations related to individuals being at the early stages of their careers. Previous research shows that job tenure is associated with job satisfaction (Dobrow Riza et al 2018), but almost all Add Health respondents reported being in different occupations at Wave IV than at Wave III. These differences may be a function of respondents still being in the process of obtaining the necessary credentials at Wave III that are needed for their Wave IV occupations, and may be indicative of "job hopping" whereby young people are more willing than past generations to switch jobs and careers (Fry 2017), or reflect other exogenous shocks to the labor market that cause them to shift career paths (e.g., Great Recession). By examining job satisfaction at different career stages, work and health scholars can examine whether the early care work advantage in job satisfaction observed in this study is sustained over time as people spend more time at work. Addressing this limitation will be possible with future waves of Add Health that follow the original sample into midlife and beyond. Doing so will be especially

important in the face of the COVID-19 pandemic, given that care workers are on the frontlines battling the virus and making more ethical decisions in the face of limited resources. Following this essential population as they work and age is an important goal for future studies of work and policies aimed at protecting care worker health.

This study contributes to a broad sociological literature that informs efforts to break down gendered occupational segregation, reduce gendered-disparities in work-related wellbeing, ensure care workers are able to carry out their ethical responsibilities, and protect care-working men and women from less healthful aspects of their work. Such research, therefore, has the potential to not only shape the wellbeing of a large and increasingly important segment of the workforce, but also the lives for whom they care.

Chapter 4: The Lived Experiences of Ethical Responsibility in Care Work Occupations: The Case of Nurses, Teachers, and Social Workers

Professional care workers are an increasingly essential workforce who provide face-to-face services in the context of interpersonal relationships that help people develop or improve valued aspects of their lives. Spanning the health care, education, and social service sectors, care workers serve vulnerable populations, including children, the sick, and the elderly. Ethical responsibility—or acting in the best interest of at-risk care recipients—is a key aspect of care work that attracts many people to caring occupations. Although ethical responsibilities may differ in practice across care work sectors, the extent to which care workers feel that they are able to carry out ethical responsibilities likely colors how they experience their jobs and factors into whether they remain in the care work force long term.

The coupling of well-documented advantages in job satisfaction among care workers with their high rates of burnout and turnover calls for a deeper dive into care workers' actual experiences of ethical responsibility. Although caring occupations like nursing, teaching, and social work have historically had high rates of turnover and burnout, the COVID-19 pandemic has presented new and heightened ethical challenges to care delivery as workers reconcile changing norms around care provision and limited resources. Thus, understanding care workers' experiences with ethical responsibility, both prior to and during this critical demographic moment, is a top priority for supporting and retaining the care workforce.

In this spirit, this study examines the extent to which care workers—both as a whole and by industry—interpret their ethical responsibilities and see themselves as fulfilling or falling short of them in ways that contribute to job satisfaction or burnout. It also explores the ways in which COVID-19 has changed ethical responsibilities and care workers' abilities to carry them

out. To address these aims, this study draws on qualitative interviews conducted during the COVID-19 pandemic with 41 men and women employed in three of the largest occupations in the health care, education, and social service industries, namely registered nurses, licensed K-12 teachers, and licensed social workers. It also draws on best practices within these three occupations to make policy recommendations that ensure that care workers have the resources and supports they need to carry out their ethical responsibilities in a post-COVID world.

BACKGROUND

Ethical Responsibility in Theory Versus Practice

Although many occupations include some level of care work, care workers explicitly take responsibility for meeting the needs of others (Fisher and Tronto 1990). This type of professional responsibility includes *ethical* responsibility, which refers to the commitment to making decisions and acting in the best interests of care recipients (Stolle 1996). In addition to making decisions, ethical responsibilities include using best judgment, solving problems, evaluating information to determine compliance with standards, interpreting the meaning of information for others, and documenting and recording information. In other words, ethical responsibility requires care workers to describe, weigh, and document occupationally and legally prescribed courses of action that are consistent with the client's best interests when making major decisions. This aspect of care work takes on additional ethical significance in that care workers' clients are often from vulnerable populations (e.g., children, the sick, and the elderly).

Being entrusted with the responsibility to advocate for and make decisions in the best interest of vulnerable others is a common reason that people choose to go into care work occupations (Dill, Erickson, and Diefendorff 2016; Morrison and Korol 2014). Thus, the

advocacy, trust, and autonomy that go along with having ethical responsibility are all potential drivers of the care work advantage in job satisfaction, whereby care workers are more satisfied with their jobs than their non-care working peers (Lightman and Kevins 2019).

The ethical responsibility that motivates so many to go into care work, however, may or may not be fully realized in practice. Thus, job satisfaction that arises from taking ethical responsibility likely depends on the institutional resources and constraints within the care-giving landscape. Care workers, who do not feel that they have the power, resources, or support to do what they believe is in their clients' best interests, may experience significant emotional distress (Polman and Vohls 2016; Donovan and Regehr 2010; Ulrich et al. 2007). Because care workers report facing ethically-charged situations on a regular basis (Davies and Heyward 2019; Rathert, May, and Chung 2016), carrying out ethical responsibilities without the appropriate supports in place may result in burnout—characterized by chronic exhaustion, job disillusionment, and feelings of ineffectiveness (Leiter and Maslach 2009; Maslach, Leiter, and Schaufeli 2008). The first aim of this study is to describe how care workers as a whole understand their ethical responsibilities and view their lived experiences as consistent with or at odds with these responsibilities in ways that influence job satisfaction and/or burnout.

Ethical Responsibility Across Care Work Sectors

Professional care workers can be found across the health care, education, and social services industries. Although care workers are ethically responsible in each of these settings, what that means depends on the specific needs and goals of their care recipients (e.g., patients, students, clients). First, health care workers make judgment calls that affect the immediate health and wellbeing of those in their care. Ethical responsibilities associated with this type of work may include empowering patients to take a more active role in their care or discontinuing

treatment for dying patients (American Nurses Association 2015; American Medical Association 2021; Nibbelink and Brewer 2018). Second, education workers are tasked with creating safe and equitable environments in which children can grow and learn, which includes advocating for students with special needs or serving as mandatory reporters of suspected child abuse (Feng et al. 2012; Hupe and Stevenson 2019; National Education Association 2020). Third, social services workers advocate for social and economic justice and provide vulnerable populations with services and resources that promote social welfare (National Association of Social Workers 2021). Ethical responsibility may take the form of maintaining confidentiality, practicing unconditional positive regard for clients, and promoting client self-determination. These responsibilities are often institutionalized and guided by professional codes of ethics maintained by each profession.

Although care workers have different goals across settings, they are all vulnerable to the burnout—in the form of exhaustion, ineffectiveness, and disillusionment—that may arise from taking ethical responsibility over time (Phi Delta Kappan 2019; Mor Barak, Nissly, and Levin 2001; Shah, Gandrakota, Cimonetti, et al. 2021). Understanding the industry-specific ways in which care workers engage and cope with ethical responsibility on the job is critical to shaping policy efforts to reduce burnout and support care workers across a variety of fields. The second aim of this study is to delineate ways in which ethical responsibility is experienced similarly or differently by workers across care industries.

To address this aim, the study focuses on the lived experiences of care workers in three of the largest occupations within the health care, education, and social services industries: nurses, teachers, and social workers. Despite being in different sectors, these three occupations typically require similar levels of education attainment (e.g., bachelor's degree and often a master's

degree), are governed by occupational codes of ethics, and often overlap in the populations they serve and the settings in which they work (e.g., school nurses, hospice social workers).

COVID-19 and Ethical Responsibility across the Care Sector

COVID-19 has drastically altered the contexts in which care is provided, with likely implications for how ethical responsibility is carried out by care workers (Banks et al. 2020; Daniel 2020; Jia et al. 2020). For example, many aspects of ethical responsibility typically carried out in face-to-face settings (e.g., getting informed consent, ensuring confidentiality, relaying sensitive information) are now being done remotely or in socially distanced ways meant to prevent the spread of the virus. Care workers have had to take new approaches to providing ethical care in the face of higher workloads and limited resources. Such approaches may prevent care workers from being able to fulfill what they see as their ethical responsibilities on the job, with implications for whether they stay in their occupations long term (Holmes et al. 2021; García Manzano and Ayala Calvo 2021; Pressley 2021). The third aim of this study is to assess the impact of COVID-19 on care workers' ethical responsibilities and their ability to fulfill them. This study additionally provides insight into how the pandemic has uniquely influenced caregiving across health care, education, and social service sectors.

DATA AND METHODS

Recruitment of Participants

Recruitment efforts began after receiving Institutional Review Board approval. Research participants were recruited through alumni email networks and social media groups (e.g., Facebook, Twitter) of schools of social work, nursing, and education in a large southwestern state. Participants were eligible to take part in the study if they were (1) employed for at least a

full calendar year (for at least one year prior to September 2020) as a registered nurse, licensed teacher, or licensed social worker. In recruitment emails and social media posts, interested participants filled out a Qualtrics screener that requested information about current occupation, length of employment, sex/gender, email address, and interest in participating in an hour and a half-long follow-up interview. Over 140 individuals completed the screener survey, with 77 respondents meeting both inclusion criteria. Eligible participants were first stratified by occupation and then randomly selected to participate in a recorded Zoom interview. A total of 63 participants received invitations to participate, with 41 participants ultimately scheduling interviews and participating in the follow-up interview. Overall, the sample included 12 registered nurses, 15 licensed teachers, and 14 licensed social workers. About two-thirds (66%) of participants identified as women, and over half had been in their occupations for five years or less (56%). Table 4.1 features the sex/gender, length of tenure, and job titles by occupation.

Table 4.1. Demographic information for interviewed participants

Occupation	Female	Job tenure				Job titles
		1-2 years	3-5 years	6-10 years	>10 years	
Nurses (n = 12)	67%	42%	25%	8%	25%	ICU nurse, school nurse, oncology nurse, medical/surgical nurse, intermediate care nurse, psychiatric nurse practitioner, internal medicine nurse, urgent care nurse, maternal/child nurse, cardiovascular/stroke nurse, float pool nurse
Teachers (n = 15)	53%	7%	47%	20%	27%	High school teacher middle school teacher; elementary teacher; special education teacher; music teacher; alternative school teacher
Social Workers (n = 14)	79%	21%	29%	36%	14%	Hospice social worker, oncology social worker, school social worker, adult mental health social worker, child/family therapist, child welfare social worker, housing/homelessness social worker

Data Collection

All interviews were conducted by the author on a secure, university-hosted Zoom platform and were audio recorded and transcribed via Zoom. Each interview took place between September and November 2020 and lasted between 60-90 minutes. Participants were emailed a copy of the consent form one day before their scheduled interview to review. At the beginning of the interview, the interviewer re-sent this form via DocuSign and obtained written consent before starting the Zoom recording.

Each interview began with questions about the participant's job title, client demographic, and training, and then asked each participant to describe what they like most and least about the work they do. The interviewer shared a definition of care work occupations and ethical responsibility and introduced ethical responsibility as the focus of the interview.

The participants were then directed to a Qualtrics survey link that included six Likert-type questions assessing the degree to which they agreed (strongly agree, agree, somewhat agree, neither agree nor disagree, somewhat disagree, disagree, and strongly disagree) with several statements regarding ethical responsibility. The interviewer then asked participants to explain why they answered in a particular way, which helped structure and steer the interview and allowed the interviewer flexibility to explore topics more deeply. The first survey item (*Ethical responsibility is an important requirement of my work*) prompted discussions about the theoretical significance of ethical responsibility within care work. The next four items (*I enjoy the ethical responsibility my work requires; My job requires more ethical responsibility than I would like; Ethical responsibility on the job harms my physical health; Ethical responsibility on the job harms my mental health*) explored participants' lived experiences with ethical responsibility, including their level of satisfaction and the perceived ramifications of these

responsibilities on their health. The last item (*Ethical responsibility on the job has changed due to COVID-19*) investigated the ways in which care workers viewed ethical responsibility as having changed in light of COVID-19. Results from this survey are presented in Table 4.2 and discussed below. For ease of interpretation, responses were distilled from seven to three Likert-type categories: agreement, disagreement, or neither agreement nor disagreement.

Although there are various methods for determining the number of participants necessary to achieve saturation, the author exceeded the project goal of 30 interviews (with 10 participants in targeted occupations) by eleven to ensure that saturation was reached and that no new themes or additional information emerged by the end of the final interview (Fusch and Ness 2015).

Data Analysis

All interviews were audio recorded and transcribed via Zoom, with the author then going through each transcript and audio recording to ensure that the automated Zoom transcription picked up all nuance (e.g., pauses, colloquialisms). Thematic analyses were conducted using NVivo qualitative data analyses software (QSR International 2020). Specifically, each of the theorized components of ethical responsibility—judgment and decision-making, problem-solving, evaluating information to determine compliance with standards, interpreting the meaning of information for others, documenting and recording information—were a priori themes. Additional a priori themes included the characteristics of care work often linked to job satisfaction, including advocacy, trust, and autonomy; and characteristics linked to burnout, namely chronic exhaustion, disillusionment, and ineffectiveness. Participants' mental and physical health related to ethical responsibility were also a priori themes, as was the impact of COVID-19 on ethical responsibility. Salient emergent themes included additional ethical responsibilities (e.g., keeping others safe, commitment to social justice), coping mechanisms and

best practices for managing ethical responsibility, and surveillance of co-workers as a way to ensure that they are fulfilling their ethical responsibilities. These themes are situated within broader frameworks of job satisfaction and burnout within care work occupations.

RESULTS

Care workers as a whole shared a number of similarities in their lived experiences with ethical responsibility, both prior to and during the COVID-19 pandemic. At the same time, results suggested important nuances between nurses, teachers, and social workers that contributed to occupation-specific sources of satisfaction and burnout.

The within-interview survey (See Table 4.2) used to guide interviews revealed that all 41 participants (100%) felt that ethical responsibility was an important requirement of their work, with the vast majority (85%) also indicating enjoying having ethical responsibilities on the job. Over a third of participants (37%), however, indicated that their jobs required more ethical responsibility than they would like. Although recognizing the centrality of ethical responsibility to their work, care workers were cognizant of the toll it took on their health. Specifically, 44% of respondents agreed that ethical responsibility harmed their physical health, and close to 71% attributed worse mental health to this requirement. Almost three-quarters (73%) of participants felt that their level of ethical responsibilities had changed during the COVID-19 pandemic.

Table 4.2. Results from within-interview survey for all participants and for each occupation

	Ethical responsibility is an important requirement of my work	I enjoy the ethical responsibility my work requires	My job requires more ethical responsibility than I would like	Ethical responsibility on the job harms my physical health	Ethical responsibility on the job harms my mental health	Ethical responsibility on the job has changed due to COVID-19
	% agreeing with the statement					
All participants (n = 41)	100%	85%	37%	44%	71%	73%
Nurses (n = 12)	100%	75%	50%	42%	58%	50%
Teachers (n = 15)	100%	87%	53%	67%	93%	87%
Social workers (n = 14)	100%	93%	14%	21%	57%	71%

Interpreting Ethical Responsibilities

The first study aim was to describe how care workers as a whole understood their ethical responsibilities. Across occupations, ethical responsibility was a necessary and ever-present aspect of care work. This was best exemplified by Sarah, a middle school special education teacher, when she said "It's just something that we do all the time. And it's something I think about… maybe not explicitly… all the time." Although care workers generally enjoyed their ethical responsibilities, they found them to be differently satisfying. Participants were more likely to cite decision-making, problem-solving, and interpreting information for others as enjoyable, compared to documenting and recording information (e.g., charting, grading) or being compliant with administrative and legal standards (e.g., mandatory reporting). Care workers also identified the importance of these latter two responsibilities from an ethical-legal standpoint, however, and believed that they were critical to providing ethical care. Additional ethical responsibilities included keeping those in their care physically safe, advocating for people who could not speak for themselves, and changing systems that they believed perpetuated inequality.

Ethical Responsibility in Theory Versus Practice

Also part of the study's first aim was examining how care workers viewed their lived experiences as consistent with or at odds with their theoretical ethical responsibilities in ways that influenced their job satisfaction and/or burnout. According to participants, carrying out ethical responsibility meant doing what is best for those in your care, which included all of these aspects of ethical responsibility. Participants often described ethical responsibility as a theoretical goal and as something that got them into the work to begin with. For example, Leah went into teaching after graduating from college because she had, "just learned about all these injustices, and now [she was] actually doing something about it." However, many care workers

described what John, a child/family therapist, referred to as "system shock," whereby people quickly realize institutional constraints that prevent them from fulfilling their ethical responsibilities. In another instance, Celeste, a mental health social worker explained that, "early on, you go into it like, 'Oh, I'm going to change the world.' And then you quickly learn like that's not gonna… That's not gonna happen." Although many people went into caring occupations hoping to make a difference, make meaningful decisions, and do work that was in line with their personal beliefs, care workers across industries overwhelmingly agreed that the lived experience of carrying out ethical responsibility looked very different from the ideal.

First, care workers often felt *powerless* against institutional barriers, legal requirements, and much larger societal issues like racism and ableism that they were committed to addressing through their work, but that continued to shape clients' lives. Even though care workers like Greg, an ICU nurse, had "a lot of autonomy, there [was] still a significant degree of powerlessness" on the job. Even though care workers reported having decision-making power to some degree, decisions sometimes felt futile or limited in scope when it came to addressing the root of clients' problems. This powerlessness resembled feelings of ineffectiveness and lack of accomplishment that are a salient dimension of burnout (Maslach and Leiter 2016).

Second, despite having autonomy to make decisions on the job, care workers were expected to make constant, and often heavy decisions without having time to process them before having to make another judgment call. Adding to the inability to take mental breaks, many ethical dilemmas that care workers faced had no right or wrong answers. The ambiguity of decision-making and their inability to "turn it off" contributed to *decision fatigue*, a unique form of chronic exhaustion and contributor to burnout (Scott et al. 2014).

Third, although care workers often described care work as being in line with their ethos or orientation toward the world, they often faced *moral dissonance*, or the incongruence between their personal morals and beliefs and what they were expected to do as part of their job. Care workers were often obligated to act in ways they actively disagreed with and believed caused harm to the people they were supposed to be protecting, which contributed to feeling burnt out in the form of disillusionment and demoralization (Cherniss 1995; Maslach and Leiter 2016).

In other words, care workers noted important inconsistencies between their theoretical expectations and practical experiences with ethical responsibility on the job. The sections that follow address the second study aim to delineate ways in which ethical responsibility is experienced similarly or differently by workers across care industries. Specifically, they depict how nurses, teachers, and social workers grapple with occupation-specific ethical responsibilities in ways that protect them from or fan the flames of burnout.

Nurses' Experiences with Ethical Responsibility

All twelve nurses agreed that ethical responsibility was an important aspect of their work, with 75% indicating that they enjoyed their ethical responsibilities and half (50%) expressing that their work required more ethical responsibility than they would have liked. Nurses most often cited decision-making and interpreting information for others as their primary ethical responsibilities, with a focus on educating and empowering patients to take more active roles in their health care. They also reported great pride in being able to advocate for the best interests of patients, especially when patients could not communicate their wishes (e.g., sedated, unresponsive). Amanda, an ICU nurse, noted that

> "I think we're always voted the number one most trusted profession and like I hold that in really high regard because I will always be an advocate for my patient, especially when I

> don't think that…Whether it be the family or the doctors or like whoever is not, is not taking their opinions and their needs into account… like, I will not stand for family bullying my patient to do a surgery that she doesn't want to do."

At the same time that nurses enjoyed advocacy, they reported feeling powerless in the face of hierarchical (e.g., doctor-nurse) norms of decision-making that discounted their professional opinions. For example, Pamela, a cardiovascular and stroke nurse, lamented that "I can say my piece, but at the end of the day, I'm not the captain… the medical doctors are." Powerlessness was especially poignant in instances where nurses were legally bound to carry out family's wishes that they believed hurt their clients. Such powerlessness translated into what Annie coined as, "moral dissonance" whereby nurses

> "are often required to do things that we actively disagree with. And that part is not really enjoyable at all. There's a lot of moral dissonance, I would say, in what I do between what I feel is right for a situation and is right for the patient and their quality of life, and what their family member is considering. That's a very constant issue in my job."

Repeated instances of powerlessness and moral dissonance were exacerbated by decision fatigue, whereby nurses were expected to make back-to-back, and often traumatizing decisions that weighed heavily on their hearts and minds. For example, Aurora, a labor and delivery nurse, described having to support a mother who had a late term miscarriage, put her "baby literally in a black box, take the child down to the morgue, and then before I could even cope and handle it, got a new admission." Sam, a medical/surgical nurse, described that sometimes, there are

> "times I come home from work and still have… like my, my brain is still… working on decisions, like even like after they've been made. Like thinking about things that happened and whether or not they were the right thing."

Nurses noted many of these experiences as contributing to clinically-diagnosed anxiety, depression, and post-traumatic stress syndrome. Donna, an oncology nurse, even expressed that "I felt like after every shift, that I had gone through the battlefield that day." Despite the mental exhaustion that accompanied this work, nurses like Andie, an intermediate care nurse, reported:

> "There's a lot of times where I've had decisions that were made at work or decisions that I didn't like that I was unable to… Change, I guess, or impact, that I would come home and be super upset about it or anxious to the point where like I couldn't sleep and then the lack of sleep would build up."

Thus, the primary health effects of ethical responsibility on the job were psychological in nature, although these often manifested in the body as physical exhaustion. This was reflected in 42% and 58% of nurses reporting that ethical responsibility harmed their physical and mental health, respectively. However, nurses often noted that their work schedules—especially ICU nurses—often allowed them to take several days off to reset between shifts. Nonetheless, nurses felt unable to relax on their time off and frequently depended on self-medicating and drinking alcohol off work to get their minds to "shut up" or "turn off."

Teachers' Experiences with Ethical Responsibility

Of the fifteen teachers interviewed, 100% agreed that ethical responsibility was an important aspect of their work, 87% enjoyed these responsibilities, and just over half (53%) indicated that the work required more responsibility than they would have liked. Teachers

described decision-making and problem-solving as their primary ethical responsibilities, especially around educational equity and keeping children safe. Specific responsibilities included promoting student wellbeing through inclusive pedagogy and advocating for student wellbeing within and outside of the classroom. Eman, a high school science teacher, summed her ethical responsibilities up when she described that:

> "Ethical responsibility is how I'm talking to students, my tone of voice, how I check in with them, the assignments that I give them and how long they are, how quickly I'm grading them, who I'm reaching out to… so it's it's really integral to kind of almost all aspects of my job because… it **is** ethical. Because depending on how I structure everything, it could—especially since I also have a population of students who are [in] special education or who have disabilities—depending on what choices I make, it will influence them."

Although teachers enjoyed determining what and how they taught, this constant decision-making contributed to decision fatigue. Christina, a elementary school special education teacher, expressed that, "I like being in charge because like… then I can, you know, make the choices and all that, but that responsibility can get really heavy and can be really stressful." Teachers like Camila, an elementary school science teacher, echo this sentiment when she expressed that teachers "make like 10 times the decisions that the average person makes… Because, you know, kids are asking us things, things go wrong, and you're like recreating things in your head quickly in the classroom… like… just… it's a mentally exhausting job."

Contributing to decision fatigue was moral dissonance, whereby teachers grappled with their own beliefs about what was best for students and what they were being asked to do by their

schools, districts, or states. One frequent example was grading and standardized testing that teachers often saw as ineffective and harmful tools for gaging student progress, but part of the job. Carter, a middle school social studies teacher, expressed this dissonance when he said:

> "I don't think letter grades are developmentally appropriate for 11-year-olds… I don't think it aligns with my ethos as a teacher, and so… if that's part of ethical decision-making, I hate having to make those calls on like how am I going to grade my students."

Both decision fatigue and moral dissonance contributed to feelings of powerlessness among teachers in trying to keep their students safe and learning. This was most evident when trying to advocate for students and families to get the help they needed, whether that was providing accommodations or having children removed from harmful situations. For example, after her non-verbal student was denied a communication device by her school, Hannah, a special education teacher, explained that she "[felt] like kids [weren't] getting what they need … and [she was] not able to provide it." Another salient area in which teachers felt powerless was around their roles as mandatory reporters. Teachers were often dissatisfied with how cases of suspected abuse were addressed once they were reported. Leah, a middle school English teacher, described multiple instances in which she had to call Child Protective Services (CPS):

> "I've had to call CPS on several kids before. That is not easy. That is rough, especially when the kids come to you and you are that trusted source. And, you know, I can't even tell them this stays between us because they both know that it doesn't. And just like… like I know these kids' home lives are not great. I know it. And calling CPS, you know… and then still knowing that these kids are still in there. It's like… we're doing the things that we have to do, you know… why is the situation still the same?"

As with nurses, anxiety and insomnia were the primary ways in which teachers were affected by these ethical responsibilities, although a larger proportion of teachers compared to nurses reported that these responsibilities harmed their physical (67% versus 42%) and mental (93% versus 58%) health. Teachers most often cited role overload as the link between ethical responsibility and health. Specifically, teachers commonly reported that in order to do their jobs well, they had to "give 100%" and take on the additional roles of quasi-mental health professionals and social workers in addition to being educators. Numerous teachers reported buying food and clothing for children or working around the clock to provide additional support for their current and former students, responsibilities which became, according to Camila:

> "so… stuck in your brain, all the things that they need. Or all the things they don't have that you wish… not that you could even give them… but like… just to meet their needs, right?... The problem is their needs are not met, and you're always trying to find a way in the classroom to do that for them in a way that's fair to everybody. The overwhelming responsibility to provide everything that students need."

Teachers ended up doing uncompensated labor to combat feeling powerless. Sonya, a middle school science teacher spoke of feeling "complicit" with an educational "system that is broken."

Social Workers' Experiences with Ethical Responsibility

All 14 social workers agreed that ethical responsibility was an important aspect of their work, with all but one also indicating that they enjoyed these responsibilities. Interestingly, only two social workers felt that they had more ethical responsibility than they would have liked. Similar to nurses and teachers, social workers most often noted making decisions as their primary ethical responsibility. There were, however, important distinctions social workers drew

between themselves and other caring occupations. Zoe, a child welfare social worker described what makes social work so unique:

> "Obviously, the focus of nursing is medical… with a side of ethics, you know? Like, in like teaching, same thing… like pedagogy with a side of ethics… like social work **is** ethics and then with the side of like… how to use those ethics to then influence action."

Social workers, especially those in mental health settings, also noted their role in documentation as a salient ethical responsibility, specifically not wanting to put in writing anything that could harm their client in a court of law. Another distinction between social workers and the other two occupations was that social workers had specific structures in place to help them cope with powerlessness, decision fatigue, and moral dissonance. These were the National Association of Social Worker Code of Ethics and the interdisciplinary team decision-making model. Although nurses and teachers also have codes of ethics (American Nursing Association 2021, National Education Association 2021), only social workers reported explicitly referring to the professional Code of Ethics in their everyday practice.

Despite having these supports, social workers were not immune to burnout. Social workers often described experiencing decision fatigue on the job and often talked about the difficulty of making decisions in ethically "grey" scenarios on a regular basis. When asked whether she enjoyed her ethical responsibilities on the job, Angela, a mental health social worker, talked about her love of her work as being qualified by the fact that "things are rarely black and white in [her] field, and it's very rarely clear what exactly needs to be done." She went on to talk about having to "constantly [make] decisions and [use her] own discretion… so many times a day." However, social workers described using their Code of Ethics to determine the best

courses of action, even in situations where there was not a right or wrong answer. They also felt supported by working in interdisciplinary teams that shared the burden of decision-making and lightened their cognitive and emotional loads.

Moral dissonance among social workers touched on social work's potential to both help and harm. Specifically, Zoe explained how "it can be hard to work within a system that is famous for disproportionality harming people of color, and people experiencing poverty, and people denied housing. I think that's really hard." However, social workers relied on their Code of Ethics to act in an ethical manner. They also felt comfortable pushing back on requests and policies that were not in line with the Code or their personal morals. For example, Julia, a hospice social worker, noted that:

> "I think when… I've been asked by supervisors to do things that didn't align with my ethical values that I just… I drew a boundary. And I said that it doesn't… it doesn't align with my professional opinion. I don't feel comfortable doing this, and if you want this intervention done, someone else is going to need to do it."

Another way in which social workers were able to combat moral dissonance was by understanding that they were advocates and not primary decision-makers. Tamara, a social worker at a large cancer hospital, explained that her job was to educate, advocate, and support clients, "even if I don't agree with it. If that's really what you want, you have the autonomy to make that decision and it's my job to help support you in that." Thus, promoting client self-determination helped social workers distance their own beliefs from the wishes of their clients.

Despite the ability to push back on requests that they felt did not fit their Code of Ethics, social workers did feel powerlessness related to working in interdisciplinary teams in which

members did not share their Code of Ethics. For example, Celeste, a mental health social worker, described how she struggled with working with colleagues that do "not [take] the same kind of 'social work approach'… like being strengths based, individualized, meeting them where they are." She went on to describe how social workers' professional opinions were often discounted by members of the decision-making team (e.g., lawyers, supervisors) that didn't share the same ethical framework.

A final way in which social workers felt powerless was in their inability to address systemic issues affecting clients, especially given the scope of what services they were able to provide clients. According to Martha, a mental hospital social worker, lamented having "responsibility without power" that they felt when clients or partners "had these expectations of things you can do, and you just can't." Jessica, who works as both a school social worker and as a contracted adult mental health therapist, echoed this sentiment when she described that:

> "It just hurts my heart to know that sometimes we send people out who are going to be back in a couple weeks after they run out of their medications… or they're going to be picked up by the police… or their housing situation isn't safe… and I don't have the time… or it's not within my job description to provide that complete wraparound case management support for them."

Again, anxiety and insomnia were the primary health-related complaints social workers had about their ethical responsibilities, although only 21% and 57% said that these responsibilities harmed their physical and mental health, respectively. Although social workers seemed to equate physical health with being physically safe at work (e.g., from assault), many

opened up about the connection between doing emotionally tasking work and physical health. Specifically, Ashley noted:

> "I think it creates this sort of heightened level of stress on top of the fact that I'm already working with kids with trauma and so there's that whole like vicarious trauma lens that I think affects me. So, you know, I just notice… And we know that, you know, our stress level and our physical health are very interconnected. And so I think that's the main way it affects me is just my stress level. And sort of my… my mental health and my physical health, I don't really see those as very separate. [laughs] I think they're very, you know, inherently connected."

Thus, although social workers did not feel that they were physically unsafe at work, they did recognize the connection between vicarious trauma and sleep trouble, headaches, and gastrointestinal distress.

COVID-19 Considerations

The last study aim was to assess the impact of COVID-19 on care workers' ethical responsibilities and their ability to fulfill them. The ongoing pandemic posed challenges to ethical responsibility for all three occupations, but teachers were most likely to indicate that COVID-19 had changed the amount of ethical responsibility they had on the job (87% of teachers versus 71% of social workers and 50% of nurses). This is likely due to the timing of interviews in Fall 2020 when many teachers were transitioning back into the classroom.

The most common way that teachers saw their ethical responsibilities as changing was in the heightened stakes of their decision-making around student safety. Although teachers like Gabi, an elementary school teacher, felt that "teachers [had] a responsibility" to keep children in

school if that is what their parents wanted, but “on the flip side, well, then someone could get sick and someone could die.” Teachers were also keenly aware that many students lived in multigenerational households and felt anxiety about their students bringing the virus home and infecting their older family members. Teachers like Carter described moral dissonance around districts “asking [him] to tell [his] students that it's safe for them to be back. And that's something [he] can't… [he’s] not going to say to them.” Teachers also noted greater responsibilities around promoting children’s socioemotional wellbeing, with teachers like Paul, a high school music teacher, pushing back on district efforts to treat this as a normal school year when “nothing is normal” and children’s health is suffering. He specifically noted making his classroom a “social outlet that is actually important,” as opposed to holding students academically accountable. Last, teachers described heightened feelings of powerlessness about keeping students well, which resulted in teachers like Jordan and Tom spending their own time and money to deliver groceries and internet routers to students in need. Although teachers noted anxiety prior to the pandemic, they indicated that their mental and physical health had taken a hit in recent months that they attributed to COVID-19.

Social workers were most concerned about not being able to reach populations in need, which they already saw as a challenge prior to the pandemic. Yet, according to Celeste, a mental health social worker, COVID “just made a hard situation worse.” Pre-pandemic, child welfare social workers relied heavily on teachers and school counselors to report instances of suspected child abuse. However, during the pandemic when children were out of school, Crystal, a mental health therapist, explained that she was “less conservative” about calling CPS and that she served as a system of “checks and balances for kids who weren’t at school.” John, a child/family therapist, also described both having “more clients entering acute care than I normally have…

[and] more clients with high needs disappearing" in the wake of COVID-19 to the point where he had to "chase folks a bit more" to get them the services they needed. He also noted difficulties in providing ethical care virtually, stating that, "I can't begin to discuss these things with you [over the phone or Zoom], knowing that you don't have privacy and [that] your answers are modified by the people around you." Thus, the biggest challenges to ethical responsibility that social workers faced during the COVID-19 pandemic were identifying clients in need and maintaining client confidentiality.

Although half of nurses also noted significant challenges that the pandemic posed to their ethical responsibilities, others like Amanda, an ICU nurse, noted that COVID-19 was just one of the many things that could kill someone, "but like the conversations of life or death and what to do… how, how you want your death to look like for your family members is still the same conversation." At the same time, nurses in other settings noted having to take on COVID-19 patients because ICUs had reached capacity. In terms of ethical responsibility, nurses were most concerned with delivering quality care and ensuring patient dignity, which they felt was being compromised because of the contagiousness of the virus. This included providing virtual as opposed to in-person care, not spending as much time with infected patients as they would have liked, and having to prepare dead bodies in morally trying ways to prevent the spread of COVID. In one example, Greg, an ICU nurse, described having to "put plastic bags over [deceased COVID-19 patients'] heads and stuff gauze in their mouths. And that broke some of us." At the same time, nurses noted that, by Fall 2020, the surge of patients had receded, and these ethically challenging situations were less prevalent.

DISCUSSION

This study explored care workers' lived experiences with ethical responsibility on the job and highlighted specific ways in which working in three different caring sectors—health care, education, and social service—colored these experiences, both prior to and during the COVID-19 pandemic. Results suggest that nurses, teachers, and social workers often go into care work because they want to actively make a difference in the lives of vulnerable populations and do work that is in line with their personal values. Care workers in these three occupations, however, noted significant barriers to fulfilling these responsibilities that often result in feeling powerlessness, experiencing moral dissonance, and exhibiting decision fatigue. These three feelings closely resemble symptoms of burnout, namely ineffectiveness, disillusionment, and chronic fatigue (Maslach and Leiter 2016). Many of these feelings have been exacerbated by the COVID-19 pandemic in ways that further jeopardize care workers' wellbeing. Together, results bring up five main topics for discussion, namely the importance of maintaining the care workforce, protecting care workers' long-term health, the overlap in experiences between care work occupations across fields, strategies for helping care workers manage ethical responsibility and avoid burnout on the job, and the role of workers in advocating for the tools they need to effectively carry out their responsibilities.

First, care workers are a growing and increasingly critical workforce in an aging, care-dependent, and post-COVID-19 world (Rogers and Spring 2020; Rosseter 2020). However, care work occupations have notoriously high rates of turnover. Even prior to the COVID-19 pandemic, almost half of U.S. teachers, between 30-40% of social workers, and 17% of nurses seriously considered quitting their jobs (Phi Delta Kappan 2019; Mor Barak, Nissly, and Levin 2001; Shah et al. 2021). High rates of turnover are not only costly to hospitals, schools, and

social service agencies, but also contribute to worker shortages that increase the caseloads and class sizes of care workers who remain and lead to poorer client, student, and patient outcomes and burnout among care workers who stay (Allan et al. 2019; Social Work Policy Institute 2010; Sorensen and Ladd 2020).

Second, the stresses of care work likely undermine health care worker health, especially through chronic occupational stress that elevates bodily inflammation (Steinhardt et al. 2011). Such inflammation contributes to physical wear and tear and is an early risk factor for a host of chronic diseases later in life (Lee et al. 2011; Libby and Ridker 2004; Liu, Wang, and Jiang 2017). Indeed, care workers across these three occupations recognized the link between stress and health. For example, Alex, a homelessness social worker, noted that his body was "constantly cranking out like… cortisol and other stress hormones [that will] have physical ramifications." Thus, reducing stress around ethical responsibility is not only crucial for care recipients but also for care workers themselves who represent a large portion of the labor force. Future research efforts should include monitoring the health and wellbeing of this essential set of workers over time—especially in the wake of COVID-19—to fully understand the ramifications of this type of work on current and later life health.

Third, results from this study suggest both the within-occupation diversity in the care work force and significant overlap in the settings in which nurses, teachers, and social workers were found. For example, teacher participants included special education, middle school, alternative school, and music teachers, among others. Similarly, nurses were employed across intensive care units, step-down units, urgent care centers, specialty hospitals, maternity wards, and school settings. Social workers were perhaps the most diverse in terms of work assignments and were located across school, hospital, and clinic settings (e.g., hospice workers, child

therapists, adult therapists, school social workers, government employees, psychiatric aides, and homelessness advocates). As a result, people employed in these occupations often served the same clients (e.g., children, sick patients) and shared ethical responsibilities specific to working with those populations. They even provided similar services, with teachers and nurses often attending to students' and patients' emotional needs, and social workers often helping clients make important medical decisions (e.g., designating Powers of Attorney, determining DNRs). This overlap could be further explored in studies concerning care workers, not by occupation or sector, but by type of client. For example, care workers that serve children (e.g., pediatric nurses, teachers, child welfare social workers) may have additional ethical responsibilities than care workers who serve other vulnerable populations.

Fourth, despite reporting similar burnout symptoms, nurses, teachers, and social workers had different strategies for coping with their ethical responsibilities. Nurses specifically talked about how their shift schedules (e.g., 2 days on, 2 days off) allowed them to cope with decision fatigue, and workers across occupations indicated taking advantage of Employee Assistance Programs. Other norms for dealing with the weight of ethical responsibility included interdisciplinary ethical decision-making and adoption and adherence to professional codes of conduct. Teams of care workers with different sets of expertise can collectively prescribe plans of action that can help reduce decision fatigue. Shared codes of conduct can also be an effective institutional support that unites care workers under a set of shared values that may help reduce feeling moral dissonance in ethically-difficult situations. Despite all three occupations having ethical codes of conduct, only social workers described the utility of these codes in decision-making. These tools have been shown to reduce moral dissonance and bolster job satisfaction in social work and may be similarly effective in combating burnout in teaching and nursing (Légaré

et al. 2011; Nancarrow et al. 2013; Vongxaiburana et al. 2011; Weinberg 2009). Thus, results from this study suggest that caring occupations revisit their ethical codes and transform them into working frameworks that can be used as a resource in ethical decision-making.

Fifth, participants across nursing, teaching, and social work often actively worked toward addressing institutional barriers to the carrying out their ethical responsibilities. Strategies included holding leadership roles within their workplaces (e.g., lead teachers, care coordinators, charge nurses), participating in local politics (e.g., attending school board meetings), and supervising future social workers, teachers, and nurses (e.g., professors of practice, clinical supervisors). Advocating for themselves and their colleagues was an important way that care workers can fight feelings of powerlessness. Much of this labor, however, was uncompensated, and it often took care workers away from providing direct care. Thus, efforts should be made to create paid positions in care settings that allow care workers to advocate for themselves without having to leave the classroom or the bedside.

Although this study has important implications for understanding and managing ethical responsibility across caring occupations, it also has some weaknesses that future research should address. This case study only considered the experiences of nurses, social workers, and teachers with ethical responsibility. Care work occupations also include doctors, nurse aides, home health workers, child care workers, and personal care assistants, among others, that have different levels of training and direct contact with care recipients. Care workers also include workers within care settings that do not provide direct care but help keep vulnerable people safe and well (e.g., school custodians, hospital cafeteria staff) (Duffy 2005). Future studies should continue to examine the experiences of ethical responsibility among occupationally and educationally diverse care workers. Furthermore, care workers in this study were primarily located in the same

large southwestern state. Because care work is often influenced by state-level policies and the demographics of people served (e.g., English Language Learners), additional studies that compare the experiences of care workers across states may yield additional nuances into how ethical responsibilities may look different across settings.

In sum, this study examined the match between the theoretical ethical responsibilities associated with care work and workers' lived experiences across three occupations. Results suggest significant overlap between nurses, teachers, and social workers in terms of their ethical responsibilities, but also highlights shared symptoms of burnout: powerlessness, decision fatigue, and moral dissonance. This study also depicts occupation-specific ways in which ethical responsibilities play out in different care worker settings, including specific ethical challenges and unique solutions to combating burnout. Drawing on these insights, this study also provides important suggestions for supporting care workers and maintaining the health and wellbeing of this essential, frontline workforce.

Chapter 5: Conclusion

Care work is essential in a pre- and post-COVID 19 world. Across the health care, education, and social service sectors, care workers take responsibility for providing services that increase individual and societal wellbeing. Their work is highly meaningful and intrinsically rewarding, which contributes to a worldwide care work job satisfaction advantage, but is also a heavy responsibility that can wear on their hearts, minds, and bodies. This caring burden is intensified by widespread devaluation of care work, whereby care workers are not only overworked but also undercompensated and underappreciated. In other words, while it can be satisfying to help others for a living, it can also hurt.

This dissertation has considered the lived experiences and health implications of carrying out care work's core requirements, with the larger goal of highlighting associations between healthful and harmful occupation-level requirements, occupational segregation, and worker wellbeing. It specifically has highlighted the tension between the care work job satisfaction advantage, the historic devaluation of care work, and high rates of burnout and turnover among care workers, especially during the early-career stage. It also has offered solutions for supporting the care workforce and lightening their load.

In Chapter 2, I addressed these larger goals by examining the role of healthful and harmful occupational requirements—theorized and then operationalized using data from the O*NET—in contributing to or buffering against chronic inflammation in an otherwise young and healthy sample of early-career adults in Add Health. First, I identified that employment in care work predicted higher levels of chronic inflammation, even early on in the career, and that ethical responsibility was the sole occupational requirement that explained this difference. I also identified that this inflammatory burden was largely shouldered by care workers with the least

education. Results from this study highlighted how occupational-level factors above and beyond workplace specific conditions shape care worker health and also highlight inequalities in work-related health by level of educational attainment.

Chapter 3 identified a care work job satisfaction advantage in the early-career Add Health sample compared with non-care workers. Although employment in care work was associated with increased bodily inflammation, care-working men and women were also more satisfied in their jobs than non-care workers. Thus, these two indicators told different stories about early-career care worker wellbeing and suggest a more complicated story about perceived versus underlying work-related wellbeing. In Chapter 3, I also found that ethical responsibility similarly explained care workers' higher levels of job satisfaction compared with non-care workers. Taking into account the highly gender segregated nature of care work, this chapter also explored how men and women differentially reap the rewards of this type of work. Although ethical responsibility explained both care-working men and women's job satisfaction advantage, men seemed to benefit more from four out of five occupational requirements compared to women.

Together, Chapters 2 and 3 elucidate key differences in wellbeing between early-career care workers and non-care workers and demonstrate important variations within care workers' experiences based on sex/gender and level of educational attainment. These chapters also highlight ethical responsibility as a health-harming (e.g., inflammation), but highly satisfying occupational requirement. These chapters not only further an understanding of how care work influences worker health, but also demonstrate the theoretical importance of occupation-level requirements for worker wellbeing. Practically, this dissertation has modeled how O*NET data can be linked to existing, nationally representative data to investigate how occupation-level assessments of occupational requirements are associated with a variety of individual and group

outcomes. Insights from this occupation-level conceptual framework may be used to inform policy interventions that promote care worker wellbeing as this workforce increases in response to COVID-19 and the aging of the U.S. population.

Chapters 2 and 3 lay the foundation for Chapter 4, which drew from qualitative interviews to identify how care workers made sense of their ethical responsibilities in theory versus in practice. Attending to industry-level (e.g., health care, education, social service) variations in care workers' experiences, Chapter 4 depicted the lived experiences of three similarly educated groups of care workers—nurses, teachers, and social workers—with ethical responsibility on the job. These interviews took place during the height of the pandemic and gave voice to frontline health care, education, and social service workers' ethical responsibilities both prior to and during the COVID-19 era. Results from this study provide additional nuances to findings from Chapters 2 and 3, and bring greater urgency to addressing the roots of burnout in high turnover caring occupations. Chapter 4 also uncovered the extent to which care workers' ethical responsibilities were different across industries, and brought to light occupationally institutionalized best practices for healthfully carrying out these responsibilities. The goal in Chapter 4 was to honor and give voice to care workers who are passionate about their work but often feel powerless in their attempts to advocate for their clients' and their own best interests.

Results from this dissertation as a whole can help care workers better understand aspects of their work that promote or harm health so that they can monitor and take proactive steps to prioritize their own wellbeing. The results may also provide care workers with evidence that can be used to mobilize and enact occupation-level change through grassroots and union efforts, like those seen throughout the U.S. in the past several years advocating for limits on client workloads, additional health benefits, and higher wages.

In sum, this dissertation is an appeal to most, if not all Americans that have ever interacted with care workers, whether through the U.S. education, social services, or health care systems. Promoting, protecting, and prioritizing care workers' health and wellbeing—especially early in their careers—is imperative. This call to action is in part because a healthy care workforce provides higher quality, consistent, and effective services than an unhealthy one for the millions of people depending on their care. It is also because we as a society should take better care of those who take care of us all.

APPENDICES

APPENDIX A. List of Care-work Occupations and their Associated SOC Codes categorized by Duffy (2005) Census Categories.

Duffy	Psychologists		Duffy	Preschool and Kindergarten teachers
19-3031	Clinical, Counseling, and School Psychologists		25-2012	Kindergarten Teachers, Except Special Education
19-3039	Psychologists, All Other		25-2011	Preschool Teachers, Except Special Education
Duffy	Counselors		Duffy	Elementary and Middle School Teachers
21-1011	Substance Abuse and Behavioral Disorder Counselors		25-2021	Elementary School Teachers, Except Special Education
21-1012	Educational, Vocational, and School Counselors		25-2022	Middle School Teachers, Except Special and Vocational Education
21-1013	Marriage and Family Therapists		25-2023	Vocational Education Teachers, Middle School
21-1014	Mental Health Counselors		Duffy	Secondary School Teachers
21-1015	Rehabilitation Counselors		25-2031	Secondary School Teachers, Except Special and Vocational Education
21-1019	Counselors, All Other		25-2032	Vocational Education Teachers, Secondary School
Duffy	Social Workers		Duffy	Special Education Teachers
21-1021	Child, Family, and School Social Workers		25-2041	Special Education Teachers, Preschool, Kindergarten, and Elementary
21-1022	Medical and Public Health Social Workers		25-2042	Special Education Teachers, Middle School
21-1023	Mental Health and Substance Abuse Social Workers		25-2043	Special Education Teachers, Secondary School
21-1029	Social Workers, All Other		Duffy	Other teachers and instructors
Duffy	Miscellaneous community and social service specialists		25-3011	Adult Literacy, Remedial Education, and GED Teachers and Instructors
21-1093	Social and Human Service Assistants		25-3021	Self-Enrichment Education Teachers
21-1099	Community and Social Service Specialists, All Other		Duffy	Teachers Assistants
21-1091	Health Educators		25-9041	Teacher Assistants
21-1092	Probation Officers and Correctional Treatment Specialists		Duffy	Chiropractors
Duffy	Clergy		29-1011	Chiropractors
21-2011	Clergy		Duffy	Dentists
Duffy	Directors, Religious activities and Education		29-1021	Dentists, General
21-2021	Directors, Religious Activities and Education		29-1023	Orthodontists
Duffy	Religious workers, all other		29-1024	Prosthodontists
21-2099	Religious Workers, All Other		29-1029	Dentists, All Other Specialists

Appendix A continued on next page.

Appendix A (cont.)

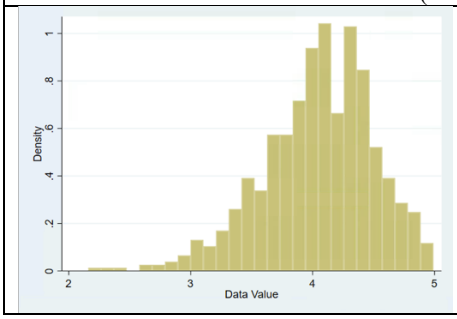
Duffy	Optometrists		Duffy	Respiratory Therapists
29-1041	Optometrists		29-1126	Respiratory Therapists
Duffy	Physicians and Surgeons		Duffy	Speech-Language Pathologists
29-1061	Anesthesiologists		29-1127	Speech-Language Pathologists
29-1062	Family and General Practitioners		Duffy	Therapists, all other
29-1063	Internists, General		29-1129	Therapists, All Other
29-1064	Obstetricians and Gynecologists		Duffy	Health Diagnosing and Treating Practitioners
29-1065	Pediatricians, General		29-2081	Opticians, dispensing
29-1066	Psychiatrists		29-2054	Respiratory Therapy Technicians
29-1067	Surgeons		29-2032	Diagnostic Medical Sonographers
29-1069	Physicians and Surgeons, All Other		29-2034	Radiologic Technologists and Technicians
29-1022	Oral and Maxilofacial Surgeons		29-2031	Cardiovascular Technologists and Technicians
Duffy	Physicians Assistants		29-2055	Surgical technologists
29-1071	Physician Assistants		29-2053	Psychiatric technicians
Duffy	Podiatrists		29-2051	Dietetic technicians
29-1081	Podiatrists		29-2052	Pharmacy technicians
29-2091	Orthotists and Prosthetists		29-2012	Medical and clinical laboratory technicians
Duffy	Registered Nurses		29-2033	Nuclear medicine technologists
29-1111	Registered Nurses		29-1031	Dietitians and Nutritionists
Duffy	Audiologists		29-1051	Pharmacists
29-1121	Audiologists		29-1199	Health Diagnosing and Treating Practitioners, All Other
Duffy	Occupational Therapists		Duffy	Dental Hygienists
29-1122	Occupational Therapists		29-2021	Dental Hygienists
Duffy	Physical Therapists		Duffy	Emergency medical technicians and paramedics
29-1123	Physical Therapists		29-2041	Emergency Medical Technicians and Paramedics
Duffy	Radiation Therapists		43-5031	Police, fire, and ambulance dispatchers
29-1124	Radiation Therapists		Duffy	Licensed practical nurses and licensed vocational nurses
Duffy	Recreational Therapists		29-2061	Licensed Practical and Licensed Vocational Nurses
29-1125	Recreational Therapists			

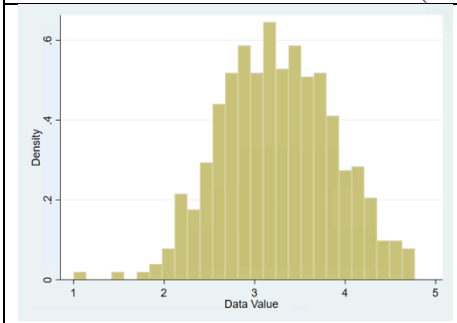
Appendix A continued on next page.

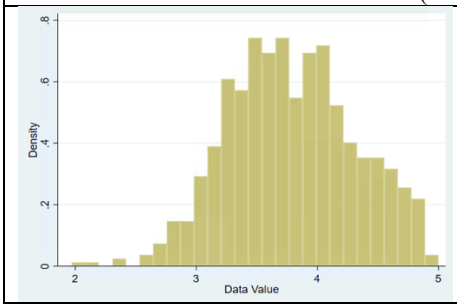
Appendix A (cont.)

Duffy	Nursing, psychiatric, and home health aides		29-1131	Veterinarians
31-1011	Home Health Aides		31-9096	Veterinary assistants and laboratory animal caretakers
31-1012	Nursing Aides, Orderlies, and Attendants		39-2021	Nonfarm animal caretakers
31-1013	Psychiatric Aides			
31-9095	Pharmacy Aides			
Duffy	Occupational therapist assistants and aides			
31-2011	Occupational Therapist Assistants			
31-2012	Occupational Therapist Aides			
Duffy	Physical therapist assistants and aides			
31-2021	Physical Therapist Assistants			
31-2022	Physical Therapist Aides			
Duffy	Massage Therapists			
31-9011	Massage Therapists			
Duffy	Dental Assistants			
31-9091	Dental Assistants			
Duffy	Medical assistants and other healthcare support occupations			
31-9092	Medical Assistants			
31-9099	Healthcare Support Workers, All Other			
Duffy	Child care workers			
39-9011	Child Care Workers			
Duffy	Personal and Home Care Aides			
39-9021	Personal and Home Care Aides			
Duffy	Recreation and fitness workers			
39-9031	Fitness Trainers and Aerobics Instructors			
39-9032	Recreation Workers			
Duffy	Residential Advisors			
39-9041	Residential Advisors			

APPENDIX B. O*NET item-level detailed descriptives.

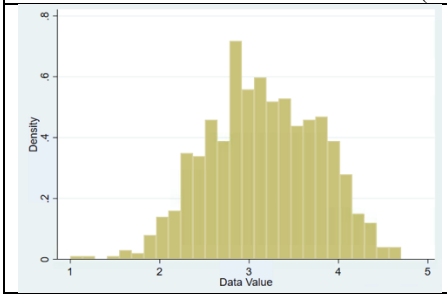
Active listening						
Active listening refers to giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times. How important is ACTIVE LISTENING to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	4.05	0.45	2.16	4.99	-0.59	3.57

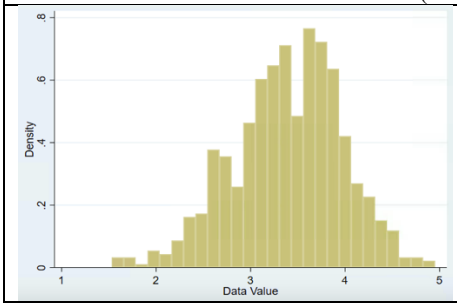
Social perceptiveness						
Social perceptiveness refers to being aware of others' reactions and understanding why they react as they do. How important is SOCIAL PERCEPTIVENESS to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.26	0.63	1.00	4.77	-0.02	2.83

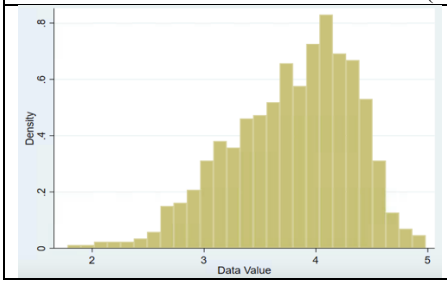
Concern for others						
Concern for others refers to being sensitive to others' needs and feelings, and being understanding and helpful to others on the job. How important is CONCERN FOR OTHERS to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.79	0.52	1.97	5.00	0.02	2.64

Appendix B continued on next page.

Appendix B (cont.)

Service orientation						
Service orientation refers to actively looking for ways to help people. How important is SERVICE ORIENTATION to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.16	0.62	1.00	4.70	-0.11	2.63

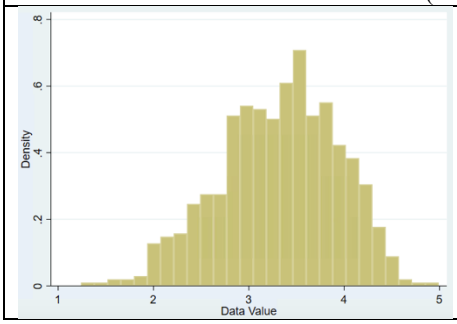
Judgment and decision-making						
Judgment and decision-making refers to considering the relative costs and benefits of potential actions to choose the most appropriate one. How important is JUDGMENT AND DECISION-MAKING to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.39	0.58	1.53	4.95	-0.32	3.02

Making decisions and solving problems						
Making decisions and solving problems refers to analyzing information and evaluating results to choose the best solution and solve problems. How important is MAKING DECISIONS AND SOLVING PROBLEMS to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.79	0.55	1.78	4.98	-0.54	2.95

Appendix B continued on next page.

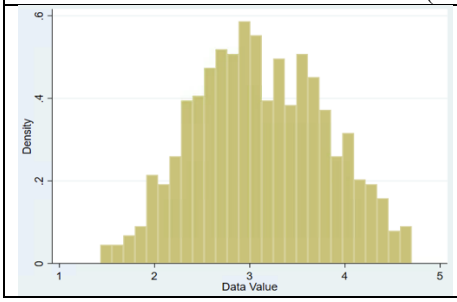
Appendix B (cont.)

Evaluating information to determine compliance with standards
Evaluating information to determine compliance with standards refers to using relevant information and individual judgment to determine whether events or processes comply with laws, regulations, or standards. How important is EVALUATING INFORMATION TO DETERMINE COMPLIANCE WITH STANDARDS to the performance of your current job? (1 = not important, 5 = extremely important)



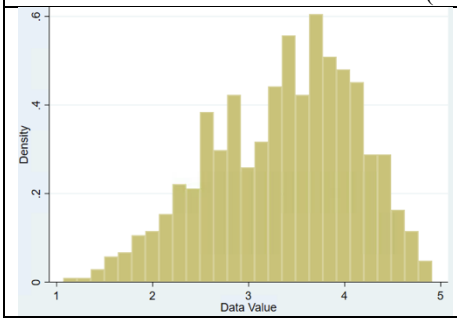
Mean	SD	Min	Max	Skew	Kurtosis

Interpreting the meaning of information for others
Interpreting the meaning of information for others refers to translating or explaining what information means and how it can be used. How important is INTERPRETING THE MEANING OF INFORMATION FOR OTHERS to the performance of your current job? (1 = not important, 5 = extremely important)



Mean	SD	Min	Max	Skew	Kurtosis
3.12	0.69	1.43	4.70	0.06	2.37

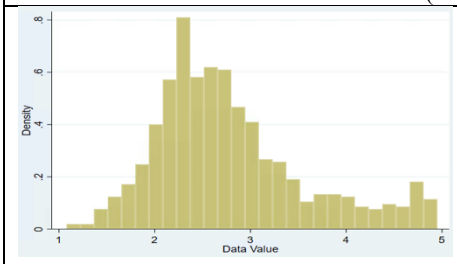
Documenting/recording information
Documenting/recording information refers to entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form. How important is DOCUMENTING/RECORDING INFORMATION to the performance of your current job? (1 = not important, 5 = extremely important)

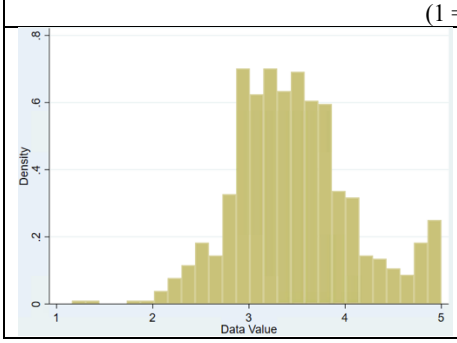


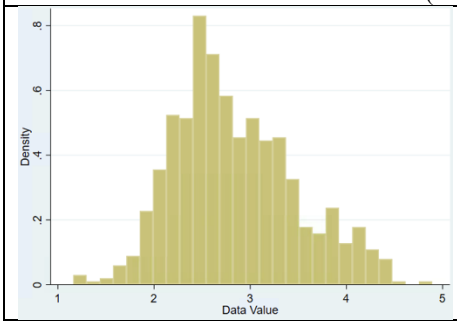
Mean	SD	Min	Max	Skew	Kurtosis
3.36	0.75	1.07	4.91	-0.39	2.51

Appendix B continued on next page.

Appendix B (cont.)

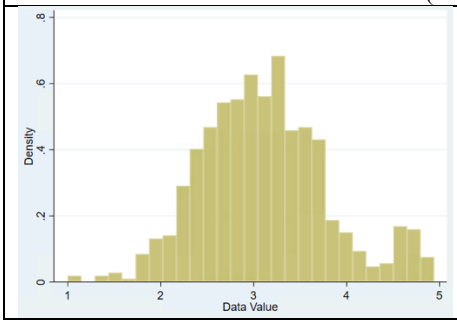
Assisting and caring for others						
Assisting and caring for others refers to providing personal assistance, medical attention, emotional support, or other personal care to others such as coworkers, customers, or patients. How important is ASSISTING AND CARING FOR OTHERS to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	2.79	0.79	1.08	4.95	0.90	3.37

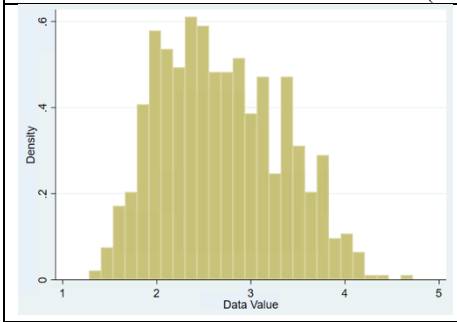
Instructing						
Instructing refers to teaching others how to do something. How important is INSTRUCTING to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.47	0.63	1.16	5.00	0.31	3.34

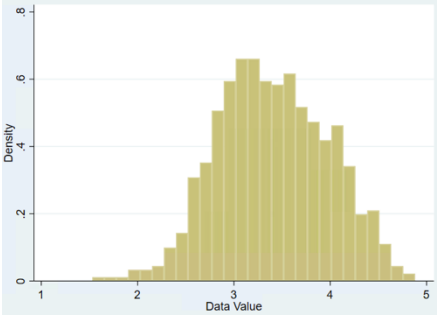
Coaching and developing others						
Coaching and developing others refers to identifying the developmental needs of others and coaching, mentoring, or otherwise helping others to improve their knowledge or skills. How important is COACHING AND DEVELOPING OTHERS to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	2.84	0.64	1.16	4.89	0.45	2.84

Appendix B continued on next page.

Appendix B (cont.)

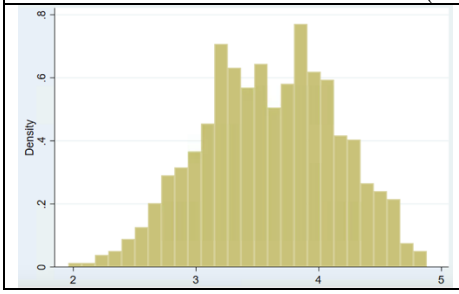
Training and teaching others						
Training and teaching others refers to identifying the educational needs of others, developing formal educational or training programs or classes, and teaching or instructing others. How important is TRAINING AND TEACHING OTHERS to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.11	0.68	1.00	4.94	0.35	3.20

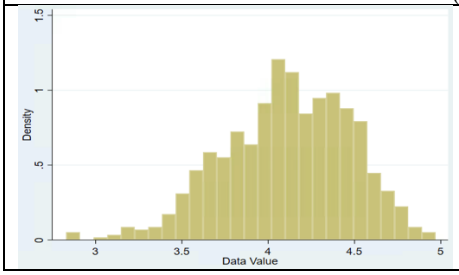
Providing consultation and advice to others						
Providing consultation and advice to others refers to providing guidance and expert advice to management or other groups on technical, systems-, or process-related topics. How important is PROVIDING CONSULTATION AND ADVICE TO OTHERS to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	2.68	0.64	1.28	4.72	0.30	2.33

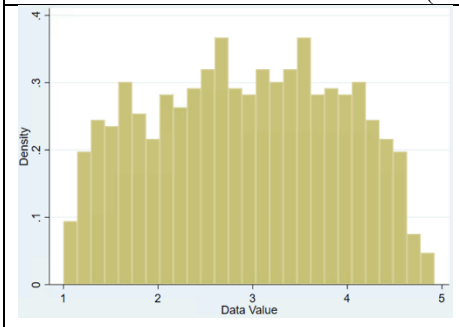
Social orientation						
Social orientation refers to preferring to work with others rather than alone, and being personally connected with others on the job. How important is SOCIAL ORIENTATION to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.41	0.57	1.53	4.88	-0.01	2.60

Appendix B continued on next page.

Appendix B (cont.)

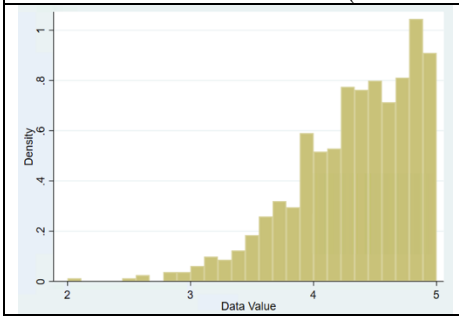
Establishing and maintaining interpersonal relationships						
Establishing and maintaining interpersonal relationships refers to developing constructive and cooperative working relationships with others and maintaining them over time. How important is ESTABLISHING AND MAINTAINING INTERPERSONAL RELATIONSHIPS to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.60	0.55	1.96	4.88	-0.12	2.46

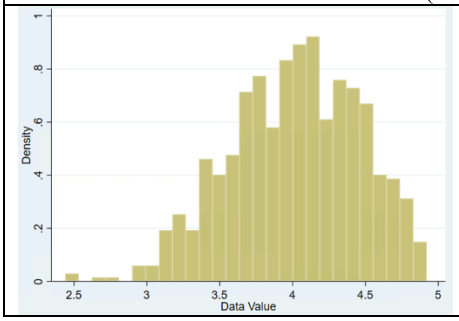
Cooperation						
Cooperation refers being pleasant with others on the job and displaying a good-natured, cooperative attitude. How important is COOPERATION to the performance of your current job? (1 = not important, 5 = very important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	4.11	0.37	2.83	4.97	-0.40	2.97

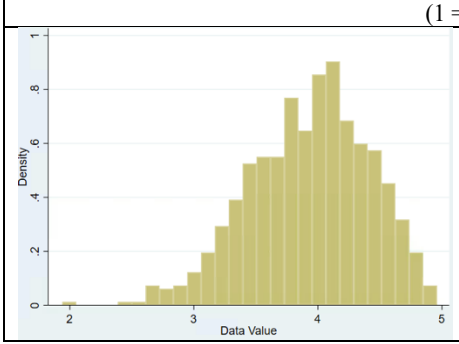
Performing for or working directly with the public						
Performing for or working Directly with the Public refers to Performing for people or dealing directly with the public. This includes serving customers in restaurants and stores, and receiving clients or guests. How important is PERFORMING FOR OR WORKING DIRECTLY WITH THE PUBLIC to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	2.92	0.99	1.00	4.92	-0.04	1.95

Appendix B continued on next page.

Appendix B (cont.)

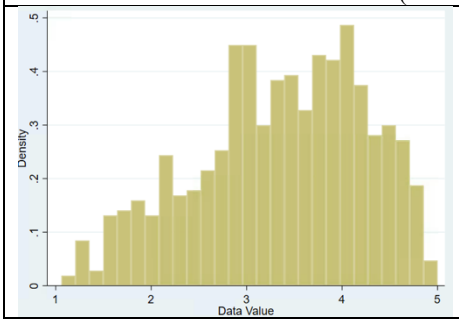
Contact						
How much contact with others (by telephone, face-to-face, or otherwise) is required to perform your current job? (1 = no contact with others, 5 = constant contact with others)						
	Mean	SD	Min	Max	Skew	Kurtosis
	4.33	0.49	2.00	5.00	-0.94	3.87

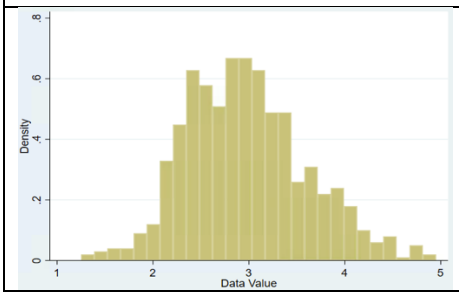
Self control						
Self control refers to maintaining composure, keeping emotions in check, controlling anger, and avoiding aggressive behavior, even in very difficult situations. How important is SELF-CONTROL to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	4.02	.45	2.44	4.92	-.30	2.69

Stress tolerance						
Stress tolerance refers to accepting criticism and dealing calmly and effectively with high-stress situations. How important is STRESS TOLERANCE to the performance of your current job? (1 = not important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.93	0.48	1.94	4.96	-0.40	2.95

Appendix B continued on next page.

Appendix B (cont.)

External customers						
In your current job, how important are interactions that require you to deal with external customers (as in retail sales) or the public in general (as in police work)? (1 = not at all important, 5 = extremely important)						
	Mean	SD	Min	Max	Skew	Kurtosis
	3.35	0.88	1.06	5.00	-0.38	2.37

Angry people						
How often is dealing with unpleasant, angry, or discourteous people a part of your current job? (1 = never, 5 = every day)						
	Mean	SD	Min	Max	Skew	Kurtosis
	2.97	0.63	1.25	4.95	0.40	3.06

APPENDIX C. Correlation between items and overall constructs

		Active listening	Social perceptiveness	Concern for others	Service orientation	Compassion
Compassion (alpha = 0.85)	Active listening	1.0000				
	Social perceptiveness	0.66	1.00			
	Concern for others	0.41	0.62	1.00		
	Service orientation	0.60	0.72	0.57	1.00	
	Compassion	0.78	0.91	0.78	0.88	1.00

		Judgment and decision-making	Making decisions and solving problems	Evaluating information to determine compliance with standards	Interpreting meaning of information for others	Documenting/ recording information	Ethical Responsibility
Ethical responsibility (alpha = 0.84)	Judgment and Decision-making	1.00					
	Making decisions and solving problems	0.61	1.00				
	Evaluating information to determine compliance with standards	0.37	0.53	1.00			
	Interpreting the meaning of information for others	0.51	0.66	0.42	1.00		
	Documenting/recording information	0.39	0.54	0.55	0.63	1.00	
	Ethical Responsibility	0.63	0.73	0.73	0.60	0.67	1.00

Appendix C continued on next page.

Appendix C (cont.)

		Assisting and caring for others	Instructing	Coaching and developing others	Teaching and training others	Providing consultation and advice to others	Therapeutic Responsibility
Therapeutic responsibility (alpha = 0.81)	Assisting and caring for others	1.00					
	Instructing	0.23	1.00				
	Coaching and developing others	0.38	0.59	1.00			
	Teaching and training others	0.35	0.62	0.82	1.00		
	Providing consultation and advice to others	0.25	0.37	0.63	0.57	1.00	
	Therapeutic responsibility	0.62	0.72	0.89	0.87	0.72	1.00

		Social orientation	Relationships	Establishing and maintaining interpersonal relationships	Sociality
Sociality (alpha = 0.79)	Social orientation	1.00			
	Establishing and maintaining interpersonal relationships	0.53	1.00		
	Cooperation	0.72	0.55	1.00	
	Sociality	0.89	0.83	0.85	1.00

Appendix C continued on next page.

Appendix C (cont.)

		Performing for or working directly with the public	Contact with others	Self control	Stress tolerance	Dealing with external customers	Dealing with unpleasant or angry people	Direct Service Provision
Direct Service Provision (alpha= 0.86)	Performing for or working directly with the public	1.00						
	Contact with others	0.53	1.00					
	Self control	0.53	0.57	1.00				
	Stress tolerance	0.44	0.55	0.76	1.00			
	Dealing with external customers	0.76	0.64	0.50	0.47	1.00		
	Dealing with unpleasant or angry people	0.45	0.58	0.53	0.50	0.53	1.00	
	Direct Service Provision	0.83	0.80	0.76	0.72	0.87	0.72	1.00

APPENDIX D. Impact table.

Covariate	Impact	$r_{\text{care work}}$	$r_{\text{natural log transformed hsCRP}}$
Female	0.0725	0.3250	0.2230
Number of current infections at data collection	0.0008	0.0150	0.0510
Hours worked per week	0.0323	-0.1010	-0.3200
In same occupation as at Wave III	-0.0004	-0.0160	0.0250
Educational attainment	-0.0175	0.2650	-0.0660
Racial/ethnic minority	-0.0005	-0.0350	0.0150
Compassionate personality	0.0048	0.1200	0.0400
Marital Status at Wave IV	0.0013	-0.0610	-0.0220
Job repetitiveness	-0.0005	-0.0070	0.0680
Job decision-making	-0.0009	0.0220	-0.0410
Job physicality	-0.0045	0.0650	-0.0690
Occupational prestige	-0.0071	0.0980	-0.0720
Income at Wave IV	0.0054	-0.0790	-0.0680
Self-reported poor or fair health at Wave III	-0.0007	-0.0130	0.0520
Hours fasted prior to data collection	-0.0009	-0.0490	0.0190

Note. Impact calculated by multiplying the correlation of each covariate with care work by the correlation of each covariate with natural log-transformed hsCRP ($r_{\text{care work}}$ x $r_{\text{natural log transformed hsCRP}}$). Highlighted cells indicate impacts larger than the calculated impact threshold of .003.

APPENDIX E. Standardized total, direct, and indirect effects for each mediation model.

	Standardized total effect			Standardized direct effect			Standardized indirect effect		
Mediator	β	β *SE*	*p*	β	β *SE*	*p*	β	β *SE*	*p*
Ethical responsibility	0.036	0.019	*	0.028	0.020		0.008	0.005	*
Therapeutic responsibility	0.036	0.019	*	0.031	0.023		0.005	0.011	
Compassion	0.036	0.019	*	0.035	0.021	*	0.000	0.008	
Direct service provision	0.036	0.019	*	0.038	0.019	*	-0.002	0.003	
Sociality	0.036	0.019	*	0.042	0.021	*	-0.007	0.007	

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